DRUG & COSMETIC INDUSTRY

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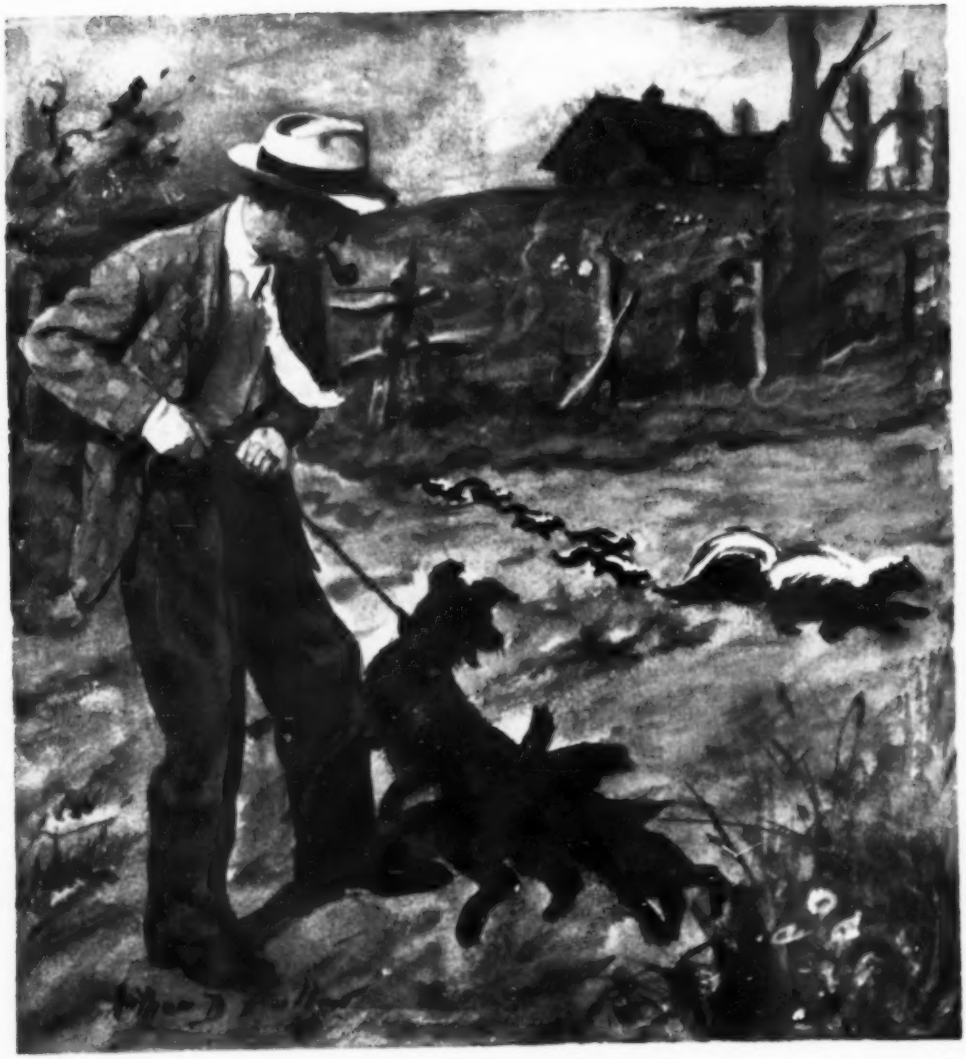

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July 1953

When there's much less suffering under the sun

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Many of the most popular lotions, creams, colognes, and other such summer sun-fighters contain Norda ingredients. Norda fine perfume compounds have helped make them successful sellers.

Quality perfumed products are creations of care and skill. You know that Norda has the skill of long years of leadership. You know how much Norda cares about quality—Norda quality proves Norda care.

Good sales result from good scents. Norda has said so for years—Norda said so first, away back.

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In Canada: Hoffmann-La Roche Ltd.
286 St. Paul Street, West, Montreal, Quebec

DRUG & COSMETIC INDUSTRY

JULY, 1953

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Hooker Chemical Guide
(ONE OF A SERIES)
USE this handy reference to save time in selecting high-quality chemicals.

HOOKER Chlorinating Agents

CHLORINE

Symbol: Cl_2

Appearance: Greenish-yellow gas at ordinary temperatures, amber liquid when under pressure

Molecular Weight: 70.9

TYPICAL PROPERTIES

Freezing Point	—100.98°C
Boiling Point	—34.5°C
Specific Gravity, Gas at 0°C (Air=1)	2.49
Liquid at 20°C (Water=1)	1.41

USES

Bleaching pulp and paper, water purification, sewage treatment, general germicide and deodorant. Manufacture of organic and inorganic chemicals; and many other uses.

MURIATIC ACID

Appearance: Hooker White Grade—Colorless
Commercial Grade—Light yellow

TYPICAL PROPERTIES

Specific Gravity, 15.5°/15.5°C	18° Be'	1.1417
	20° Be'	1.1600
	22° Be'	1.1789

USES

In manufacture of dyestuffs; refining ores, pickling and cleaning metals; manufacture of foodstuffs and pharmaceuticals; in textile dyeing and finishing; in general chemical manufacture.

SULFUR MONOCHLORIDE

Formula: S_2Cl_2

Appearance: Yellow to slightly reddish heavy liquid

Molecular Weight: 135.0

TYPICAL PROPERTIES

Last Crystal Point	—80°C
Boiling Point	138°C
Specific Gravity, 15.5°/15.5°C	1.6885

USES

Chlorinating agent: for organic chemicals, rubber substitutes, etc.; polymerization catalyst; reagent in manufacture of military gases, insecticides, chemical intermediates, phenolic resins, other chemicals; solvent for sulfur.

SULFUR DICHLORIDE

Formula: SCl_2

Appearance: Brownish-red liquid

Molecular Weight: 103.0

TYPICAL PROPERTIES

Last Crystal Point	—78°C
Specific Gravity, 15.5°/15.5°C	1.638

USES

Special chlorinating agent and chloridizing agent in metallurgy; reagent in: the manufacture of organic acid anhydrides, organic chemicals, insecticides, rubber cements, rubber substitutes, treatment of drying oils for varnishes; drying agent for coatings of ink, paint or varnish; as a replacement for sulfur monochloride where higher chlorine content is desired.

SULFURYL CHLORIDE

Synonym: Sulfuric Oxychloride

Formula: SO_2Cl_2

Appearance: Light yellow liquid

Molecular Weight: 135.0

TYPICAL PROPERTIES

Pour Point	below —54°C
Distillation Range	2° including 69.5°C
Specific Gravity, 15.5°/15.5°C	1.680
SO_2Cl_2 Content	99%

USES

Chlorinating agent: for the production of chlorophenol, chlorothymol, pharmaceuticals, dyestuffs; reacts with sodium salts of organic acids to form chlorides and anhydrides.

THIONYL CHLORIDE

Synonym: Sulfurous Oxychloride

Formula: $SOCl_2$

Appearance: Clear, pale yellow to red liquid

Molecular Weight: 119.0

TYPICAL PROPERTIES

Pour Point		below —75°C
Distillation Range	High Grade	75° to 78°C
	Tech. Grade	72° to 79°C
Specific Gravity, 15.5°/15.5°C		1.640
$SOCl_2$ Content	High Grade	98%
	Tech. Grade	95%

USES

Chlorinating agent: to replace various groups with chlorine to form acid chlorides and anhydrides. Among end products are: isoamyl chloride, synthetic pyrethrum, phenyl propyl chloride and synthetic vitamin A palamitate; antihistamines.

For detailed information on items listed, drop us a note on your letterhead. Address your request to HOOKER ELECTROCHEMICAL COMPANY, 23 Forty-Seventh St., Niagara Falls, N. Y.

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HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS • TACOMA • NEW YORK • CHICAGO • LOS ANGELES

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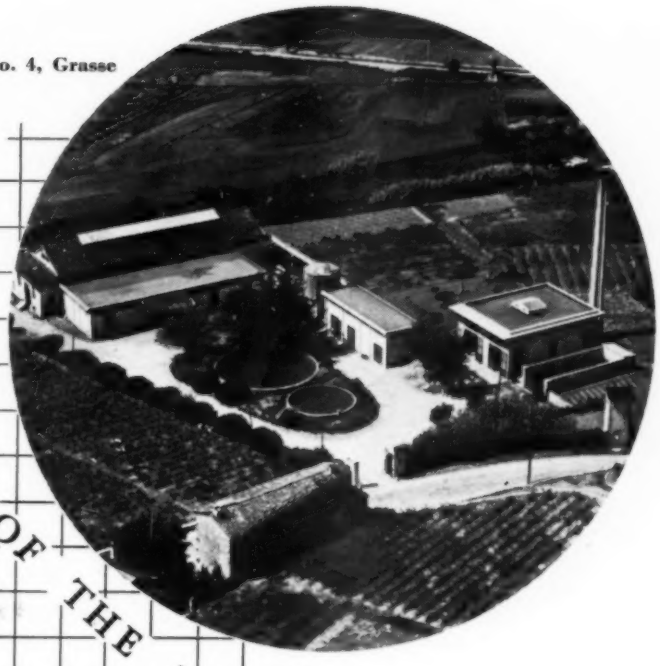
Factory No. 4, Grasse



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17 major tests!

to assure lipstick quality

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Besides the more or less routine tests, such as melting and softening point; application, correctness of shade, sheen, color distribution, etc., we of Kolmar make special tests such as breaking point, water bleeding and scientific stain analysis. Many of the major tests are done with micro-photographs (magnified 400 times).

Kolmar's testing program is continuous from the raw materials to the finished product. Every batch of lipstick made, regardless of size, is not only given the 17 major tests, but all the tests are repeated and repeated until the batch is used up. Only a few of the 17 major tests are listed here, but we shall be glad to reveal Kolmar's complete testing data to interested parties.

KOLMAR methods are unique. Its various plants across the country are staffed by *experienced chemists and highly trained technicians,* continually seeking new and better methods . . . and when necessary, inventing and producing special machinery and equipment to achieve the results desired. Thus KOLMAR Laboratories are recognized as *originators, pioneers* and *leaders* in the creation of finer cosmetic products.

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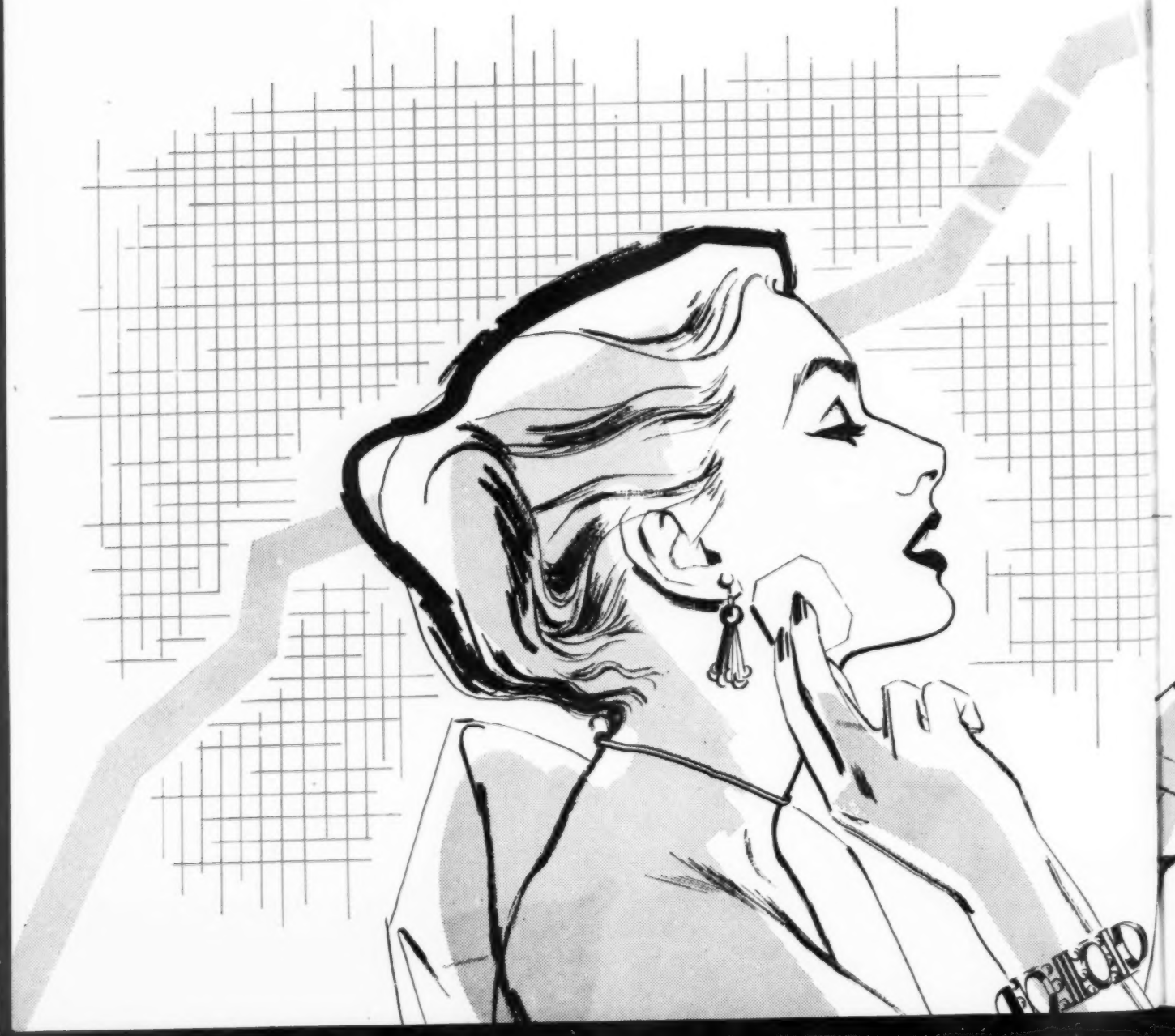
To put your cosmetics

AHEAD IN 195?

plan now...with Givaudan creations!



Perfume is a major factor in building up consumer preference for your cosmetics. The more judiciously you can select your odors to meet popular trends, the greater your assurance of growing sales. Givaudan's specialized experience in compounding and creating perfumes with outstanding appeal — and tested suitability — provides you with an effective way for continued consumer acceptance.

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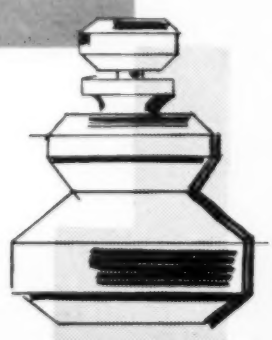

to repeat the sale

repeat the color

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satisfying the Draize-Woodward eye irritation test in all concentrations

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Specific gravity	1.070 to 1.090
Solids	35 to 37%
pH	6.3 –7.3
Active Ingredients	(approx.) 33 to 35%
Solubility in water	In all proportions
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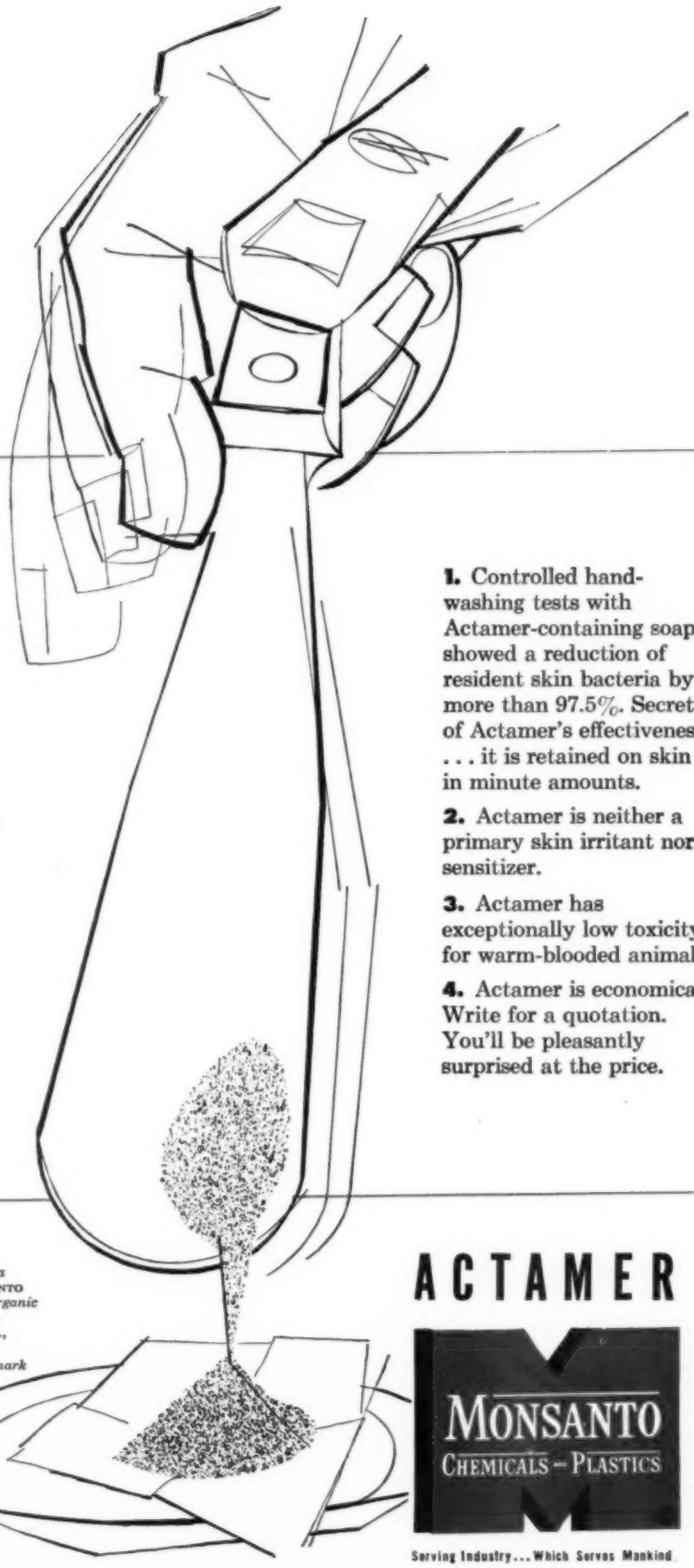

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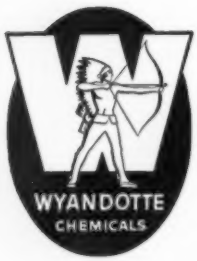

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- **baking powders**
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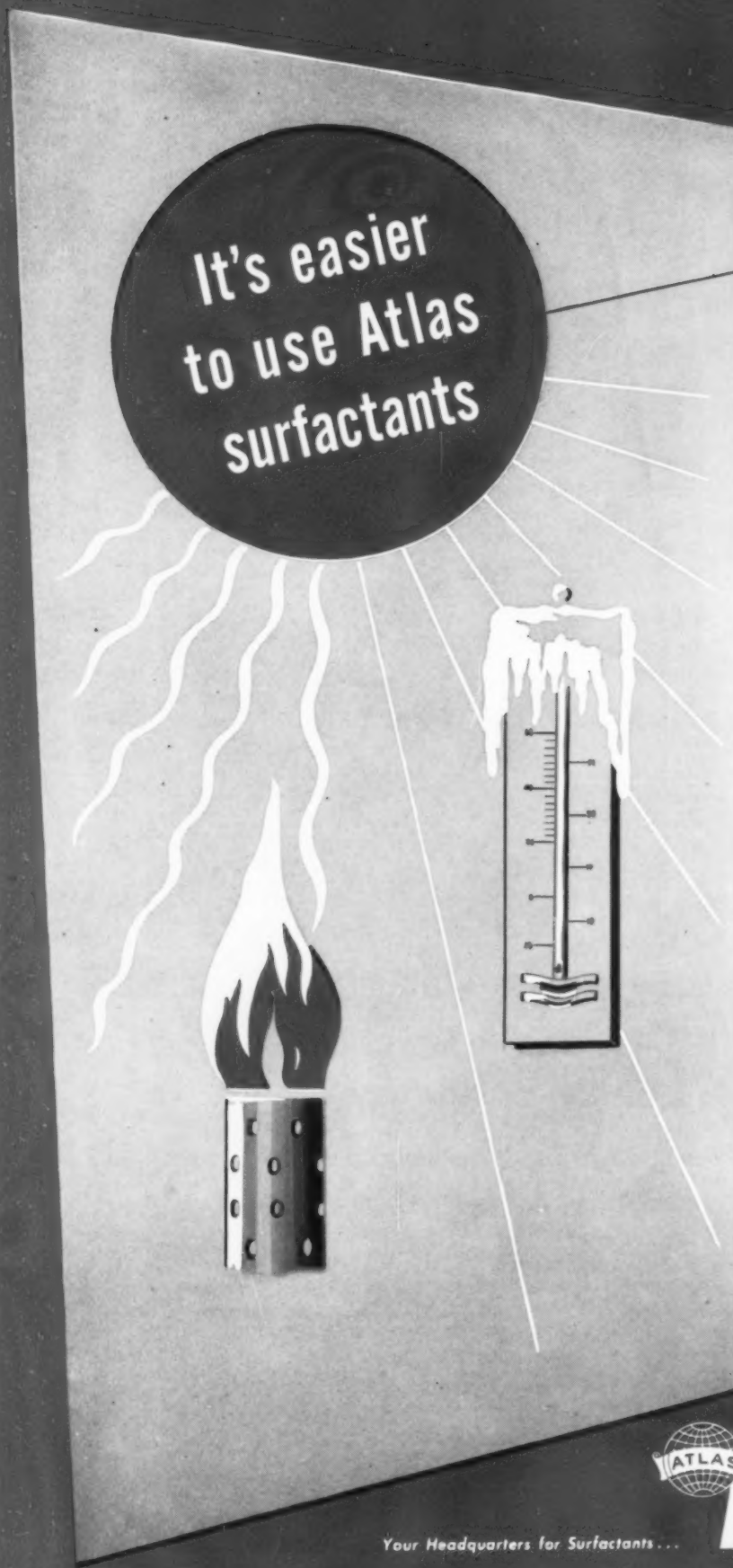

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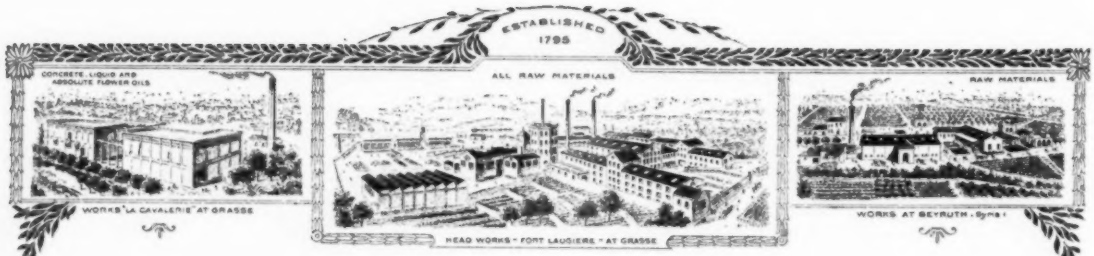

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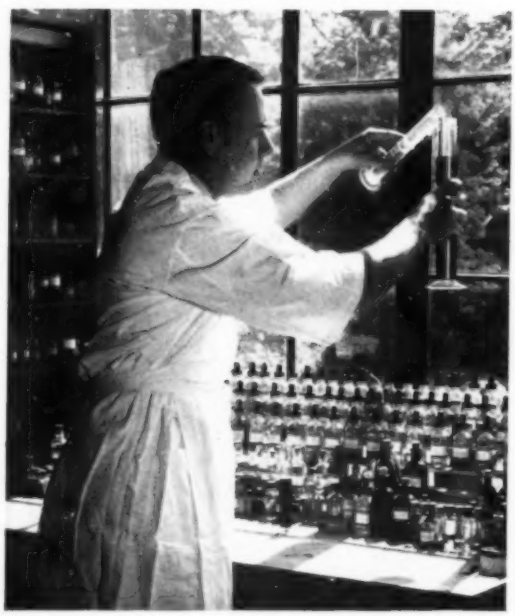

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Mallinckrodt Theophylline, packaged in 100-lb. leverpak drums and in 25-lb. fiber drums, is supplied in the following grades:

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Indelible Lipsticks and the FTC

When the word *type* is used in conjunction with the terms "indelible" and "non-smear," both in the same size type, in advertising lipsticks, the Federal Trade Commission will not issue complaints. This agreement with the FTC was reached by a committee of the Toilet Goods Association working with James A. Horton, Director of the Bureau of Industry Cooperation of the FTC.

The operation was started on March 26 when the Executive Committee of the T.G.A. instructed TGA Executive Vice-President S. L. Mayham to organize a committee of lipstick manufacturers which would consider the FTC's attitude toward these products and develop, if possible, the industry's attitude toward the use of such terms. Mr. Mayham called a meeting of more than thirty lipstick manufacturers for discussion of the matter. At this meeting the formation of a small subcommittee was suggested and subsequently this committee was organized by Mr. Mayham. This subcommittee met with the representatives of the FTC and presented the views of the industry to the effect that a usable designation for this type of lipstick was necessary to avoid confusion in the minds of the public, and to permit this type of lipstick to be readily sold in retail stores.

After prolonged discussion, Mr. Mayham suggested that use of the word *type* in conjunction with the words "indelible" or "non-smear" might solve the problem. The manufacturers had previously indicated their complete willingness to abandon the words "no-smear" and "smear-proof." A day or two following the meeting, Mr. Horton advised Mr. Mayham by mail that he had accepted this compromise.

Mr. Horton's letter was communicated to all lipstick manufacturers requesting their attitude on this proposal. All receiving the communication indicated acceptance with the condition that all existing supplies of packaging and labeling and existing advertising which had gone too far to be recalled without economic loss could be used up.

This acceptance was communicated to Mr. Horton, who indicated that arrangements in each particular case will be made by the staff of the FTC and the manufacturers so that economic loss can be avoided.

Pfizer-Syntex Agreement

Late last month Chas. Pfizer & Co. made the long anticipated announcement of their contractual agreement with Syntex S.A., the Mexican producer of steroid hormones from vegetable root sources. The announcement was made simultaneously by Pfizer and by the Syntex organizations of Mexico and Puerto Rico. Pfizer will market the Syntex line of steroid hormones both in bulk and finished package form. The new line will be known as Pfizer Syntex Products. Pfizer is replacing Chemical Specialties Co., Inc., in the marketing of bulk hormones.

According to Dr. I. V. Sollins, president of Chemical Specialties Co., the broad and diversified marketing organization of Pfizer, both in domestic and foreign fields, will not only improve upon Syntex past arrangements for distribution of its products in bulk, but will also provide an entirely new outlet for Syntex large-scale production by entering the pharmaceutical field. There will be close scientific cooperation between the two organizations especially with reference to the utilization of extensive know-how and background in the fermentation field of Pfizer and the long experience of Syntex in the organic chemical synthesis of steroid products from vegetable root sources grown in Mexico. Thus not only the older established hormones as testosterone, progesterone, estrogens, and the adrenal cortical hormones that are closely related to the sex hormones, but many new compounds requiring applications of both microbiologic and fermentation techniques, as well as chemical synthesis procedures, will be made available for marketing. The use of the know-how of both companies, it is said, should help expand the rapid development of new products in this complicated but important field of steroids.

Among the new compounds expected to be ready for marketing in the near future is hydrocortisone, or compound F. Both Syntex and Pfizer plan to expand their research programs in the chemical and microbiological fields in order to produce the newer steroid hormones more rapidly and in greater quantities than have hitherto been available.

Thus, Pfizer, long a leader in the antibiotic field, has taken its place in the newer field of steroids which is considered by many eminent authorities as the most important field of therapeutics of the future.

Aside from entering the steroid hormone field, Pfizer is also entering the field of vitamin preparations. Shortly after the announcement of the Syntex arrangement, Pfizer announced that it was purchasing the outstanding stock of J. B. Roerig & Co., a Chicago pharmaceutical house specializing in vitamin preparations with a net sales volume last year of nearly six million dollars. The purchase is to become effective July 31, and the company is to be operated as an independent subsidiary of Pfizer, utilizing the present Roerig label, personnel and sales staff. This is apparently another step by Pfizer eventually to expand its Antibiotic Division into a Pharmaceutical Division marketing the most important groups of products used by the medical profession.

Amitone Claims Dropped

Advertising claims that Amitone protects against the return of gastric hyperacidity or has any beneficial effect on gastric hyperacidity, except to afford temporary relief from the discomforts due to gastric hyperacidity, are to be avoided under the terms of a stipulation signed by Norex Laboratories, New York, according to the Federal Trade Commission.

Norex is also to refrain from representing that Amitone aids digestion or regulates excess acid in the stomach; is one of the wonder drugs; will of itself protect against the return of an ulcerous stomach condition; has a beneficial effect on all types of common stomach distress.

Second Glycerine Awards

The Glycerine Producers' Association has announced the Second Annual Glycerine Research Awards to recognize and encourage research leading to new and improved applications of glycerine derivatives to products or processes. The work may concern itself with the chemical, physical or physiological properties of glycerine, or with properties of glycerine-containing or glycerine-derived materials. The awards are open to any individual in the United States and Canada engaged in research.

Mechanized Libraries Forecast

The libraries of the future will be highly mechanized for efficiency and will distribute information by marvels of electronics, according to Mrs. Irene M. Strieby, chief librarian of Eli Lilly and Company. In addressing the medical librarians last month, she predicted:

Libraries will be indexed by machine. Abstracts and excerpts will be available on IBM cards and microcards. Books will be charged out by automatic devices and library clerks will be fewer in number. Delivery ports for books and documents will lessen confusion in all libraries.

Libraries which cannot afford elaborate equipment will be connected by electronics with those which can. A scholar may receive a facsimile of an article from a larger library, or he may page-scan it by television. With an electronic pencil he'll be able to record information on tape.

Speeding up the facsimile processes will be cameras which take pictures of pages and provide prints within a minute. Microfilms, wire recorders and teletype machines will play important roles in library convenience and efficiency.

Searching for books and references will be done in large libraries by machine methods. Unlike librarians, the machines "won't get tired." At least a dozen "dynamic documentation centers," each concentrating on one or, at most, a few fields of knowledge, will be located throughout the country to service smaller libraries. It is in these centers that the elaborate machines and electronic equipment will be economically feasible, Mrs. Strieby believes.

She further forecasts that by 1960 librarians will "abandon the preparation of abstracts," leaving this to abstracting journals. Libraries would receive a new service—multiple copies of tables of contents mailed to library subscribers upon the same date as publication of journals. These tables would be distributed immediately to individuals in the pharmaceutical industry, thus eliminating intra-office circulation of journals.

Mrs. Strieby expects a five-fold increase in the tempo of research by 1975, and doubts that by that date any individual can be "assured that he is keeping abreast of mass publication." But in spite of this enormous increase in publications, she does not believe that the libraries of 1975 will "occupy a great deal more space than they did in 1950." The answer will be found in the "impact of cybernetics." Machines, micro-techniques and facsimile will have "reduced book storage space far in excess of the additional space needed to house indeces on IBM cards," she said.

UN Opium Agreement Reached

Representatives of seventeen nations signed for their governments last month the interim protocol on production and distribution of opium, which has been in preparation at an international conference at United Nations since May 11. The document, which will come into force upon ratification by twenty-five countries, including three manufacturing states, will remain open for signature until the end of the present year.

The agreement cuts the production of opium from 2,000 tons to 500 tons a year. The Soviet Union and its satellites neither participated nor signed the protocol, on the ground that it has little or no significance. The governments whose representatives signed the protocol during a formal ceremony included both member and non-member countries of the United Nations. They were Denmark, the Dominican Republic, Ecuador, Egypt, Western Germany, France, Greece, India, Italy, Japan, the Republic of Korea, Liechtenstein, the Philippines, Switzerland, the United Kingdom, the United States, and Vietnam. In addition thirty-one countries signed the Final Act of the conference, indicating that they propose to examine its provisions and to affix their signatures to the protocol if they find it acceptable.

This provisional agreement, which stipulates regulations that will govern production and trade in opium, in essence restricts use of the drug to medical and scientific purposes. It constitutes the culmination of international efforts started in 1909 when the Shanghai Conference on Narcotics met, and is designed to be administered by the Central Opium Board until the single convention on all types of narcotics can be completed and adopted.

From the point of view of the United States, in the opinion of U. S. Narcotic Commissioner Harry J. Anslinger, who was the U. S. delegate, the protocol represents an advance somewhat greater than had been

expected. For forty-four years, he said, this country's spokesmen have been working toward acceptance of such an agreement. Even imperfect regulation under the terms of the present document, after its ratification and implementation, he stated, would be bound to bring about a decrease in narcotics imported into the United States, and ease the problems of enforcement.

W HO Drug Name Agreement

Agreement was reached last month with the World Health Organization providing for a revised procedure for the selection of non-proprietary names for drugs moving in international commerce. The following summary, appearing as part of a report prepared by American Drug Manufacturers Association and American Pharmaceutical Manufacturers Association representative John J. Horan, of Merck & Co., sets out in capsule form the basic decisions reached at the Sixth World Health Assembly at Geneva.

The summary as follows:

1. The World Health Organization non-proprietary name program is suspended to the extent that the Secretariat has agreed that it will not adopt or forward to Member States any new names until the new procedure outlined below is in effect.
2. The Sixth World Health Assembly unanimously adopted a resolution proposed by the United States which recognized the necessity for the protection of the rights of nationals of Member States and directed its Executive Board to undertake a review and clarification of the procedure to be followed in this program.
3. The Secretariat of the World Health Organization on behalf of the Director General agreed that the program for the adoption of non-proprietary names should be governed by the following rules of procedure and so recommended to the Executive Board.

i. The fact that the adoption of a non-proprietary name by the World Health Organization does not have any binding legal effect shall be made clear by the use of the word "Recommended" in connection with such non-proprietary name. Names adopted by the World Health Organization and forwarded to Member States should be entitled and always referred to as "Recommended International Non-Proprietary Name."

ii. The World Health Organization recognizes that its activities should be confined to names for drugs moving in international commerce. It is recognized here that some latitude must be left for discussion of proposed names between WHO and a country or firm which is preparing to market a drug in international commerce. The WHO clearly will not concern itself with laboratory curiosities.

iii. A non-proprietary name proposed by the discoverer or person or firm first developing or marketing a drug will be adopted by the World Health Organization as its "Recommended International Non - Proprietary Name" unless there are compelling reasons to the contrary.

iv. Names proposed for adoption by the Expert Committee will be published in the Chronicle of the World Health Organization, by letters to Member States, by letters to pharmacopoeial bodies or other groups designated by Member States.

v. Formal objection to the adoption of a name may be filed within six months of its date of publication in the Chronicle of the World Health Organization. Where a formal objection to a name is made the WHO will attempt by negotiation to obtain agreement on the name to be selected and to have the objection withdrawn. However, so long as a formal objection remains on file and is not withdrawn, no "Recommended International Non-Proprietary Name" will be selected by the World Health Organization. The program therefore will operate on a voluntary basis.

4. The Secretariat recognizes that the success of the non-proprietary name program depends upon the prevention of piracy of generic names. The Secretariat has therefore agreed that it will do everything in its power to eliminate piracy of generic names and will take certain specific steps set out below.
5. The Secretariat recognizes that as to non-proprietary names heretofore adopted by the World Health Organization the procedure was unsatisfactory so far as the United States is concerned. It recognizes that adequate notice of the proposed adoption of these names by WHO was not in fact received by American Nationals and consideration was not in fact given to their views. All such names may therefore be republished in the United States and any name to which serious objection is raised by American manufacturers within six months of this publication will be withdrawn for further consideration by the World Health Organization. Member States will be notified that such a name is being withdrawn and is not to be considered a Recommended International Non-Proprietary Name. In view of the extreme difficulty of withdrawing a name already forwarded to eighty countries throughout the World the American Delegation agreed to attempt to keep requests for such withdrawals to a minimum.
6. Dr. Stormont, Chairman of the Council on Pharmacy and Chemistry of the American Medical Association, will be appointed as the United States member of the Expert Subcommittee on Non-Proprietary Names.
7. A draft of Rules of Procedure embodying most of the above decisions was drafted and was approved by the Secretariat. These Rules have been adopted unanimously by the Executive Board and are now binding on the World Health Organization.
8. The Director General of the WHO will review the operation of the revised procedure and report on it to the Seventh World Health Assembly in 1954.
9. In connection with the publication of the International Pharmacopoeia, we informed the Secretariat of:

i. Our objection to the use of the term "pharmacopoeia."

ii. The necessity for a procedure in this program which would provide for adequate opportunity for presentation of the views of American nationals on drug standards to be adopted and published by the World Health Organization.

A statement to this effect was also made on the floor of the Assembly by Dr. Stormont.

Penicillin for Silver Nitrate

California appears to be the first state to allow the substitution of penicillin for silver nitrate to protect the eyes of the new born. For thirty-eight years the use of silver nitrate solution in the eyes of the new born has been required. Now, as the result of five years'

study, the doctor is given the choice of using either silver nitrate solution or penicillin ointment. The latter has been found to be more effective and safer to use. The change was voted by the Board of Public Health on the basis of a recommendation from the California Medical Association committee, and from Dr. Philip Thygeson, who directed the five-year study at the University of California and San Francisco Hospitals.

Now It's Chlortetracycline

Since the chemical structure of aureomycin was recently discovered, it is now possible to give this product a descriptive chemical name. The name selected is chlortetracycline. Because of the pirating of the name aureomycin in foreign countries, Lederle Laboratories is anxious to use this new chemical name as a generic name, and use the word aureomycin as a trade-mark. However, one thing has stood in the way of this change, and that is the fact that the drug is described as aureomycin in the amendment to the Federal Food, Drug, and Cosmetic Act which provides for certification of this drug. This places the word aureomycin in the public domain and prohibits it from being trade-marked. However, legislation has been introduced to replace the word aureomycin where it appears in the certification amendment, by the word chlortetracycline, thus allowing Lederle to claim exclusive use of the word aureomycin and so obtain a trade-mark. The legislation is backed by the Food and Drug Administration.

When Pfizer discovered the chemical structure of Terramycin and applied to it the generic name oxytetracycline, no such difficulty was encountered since Terramycin has never been subject to certification under the Federal Food, Drug, and Cosmetic Act.

Armour Blood Fractionation

The largest human blood fractionation installation at the Armour Pharmaceutical Center, Kankakee, Illinois, has completed preliminary tests and was recently placed in operation. The plant, occupying some 20,000 sq. ft. of the modern laboratories building, has a capacity of 78,000 500-cc. bleedings a month. From that quantity it can produce about 40,000 10-cc. vials of poliomyelitis-immune gamma globulin and about 16,000 100-cc. units of serum albumin. The blood is collected from citizen volunteers by the American Red Cross throughout the Middle West.

The Armour Laboratories made the space in its still unfinished new buildings available for blood fractionation at the request of the National Foundation for Infantile Paralysis, which retains title to the special equipment used. The probability that a poliomyelitis vaccine will become available within two to four years will set a limit on the period of demand for gamma globulin. The Foundation-sponsored tests of gamma globulin on 55,000 children in endemic polio areas of Utah, Texas, and Iowa in 1951 and 1952 indicated the temporary value of the globulin in minimizing the effects of polio. The Armour Laboratories also operates a large blood fractionating and plasma plant at Fort Worth, Texas.

All globulin produced is turned over to the Office of Defense Mobilization for free distribution to physicians to be used in polio areas according to ODM rules. None is sold in normal commercial channels.

The new plant, which stands on a 175-acre tract, is intended for manufacture of the Armour line of pharmaceutical specialties including Acthar, Thyrar, Tryptar Bidrolin, Crystar, the Crystamines, Saccharin 12, and others. These processes will be transferred to the new installation as soon as the buildings are complete and it is formally opened.

Michigan Permits Drug Sales

Last month the Supreme Court of Michigan upheld the decision of a lower court that one does not have to be a druggist to sell non-prescription medicines. In affirming the decision of the lower court, the Supreme Court said in part:

"It is made clear by testimony that patented medicines are very rare; the method now in use is to register the formula and not to patent the medicine.

"We conclude that permission given by Sec. 18, to sell patent or proprietary medicines, was not intended to be limited to the rare class of patented medicines or secret formulas, but does include authorization to sell prepackaged, non-prescription, mass produced remedies put up for sale to the general public in the distinctive and original container, and under the trade name of the manufacturer as his product under the rules and conditions set forth in the act."

Pertinent paragraphs in the decision of the lower court are:

"It appears from the pleadings that preparations now currently in dispute, as between the parties hereto, include . . . aspirin, rubbing or isopropyl alcohol, milk of magnesia, boric acid, tincture of iodine, peroxide of hydrogen, oil of wintergreen, witch hazel, mineral oil, camphorated oil, mustard powders, American oil, cod liver oil, epsom salts, citrate of magnesia, Ex-Lax, Feenamint, Vaseline and/or petroleum jellies, alum, sweet oil, liniment, spices, cream of tartar and Lysol. The evidence shows beyond dispute that many of these preparations have non-medical as well as medical uses and are packaged by the manufacturers with directions printed for ordinary domestic purposes as well as for medical purposes. The evidence shows that in drug stores, as in ordinary retail stores, such preparations are sold without restriction to the general public, commonly through or by ordinary clerks or sales persons unlicensed and untrained as pharmacists; that frequently such products are on open counters or bins in drug stores under a serve-self arrangement, whereby the customer selects articles desired and pays for them.

"It is further undisputed that the products are such as are salable without restriction to the general public; that they are obtained by merchants and druggists from the same or similar sources; that they are sold in the original unbroken or unopened container of the manufacturer, properly labeled as to ingredients and method of use, and under the manufacturer's name, brand or trade-mark.

"It is evident from the record that there is no important difference between the handling and selling of these preparations as between druggists and merchants who are not licensed as pharmacists; that there is no pharmaceutical service or intervention upon the part of the druggist in the selling of these preparations,

there being involved a retailing rather than a pharmaceutical function.

"The law imposes no requirement upon the clerks in drug stores to open or analyze the contents of the packages they sell, and the court can see no greater evil in the sale to the public of such articles by a clerk in the grocery store than by a clerk in a drug store."

Thyoquent Claims Stopped

Advertising claims that Thyoquent will cure pimples or acne, and that it penetrates the skin surface, are not to be made under a stipulation signed by Clark-Cleveland, Inc., Thyoquent Laboratories Division, Binghampton, N. Y., according to the Federal Trade Commission.

FTC Cites Charles Antell Claims

Charles Antell Formula No. 9, Charles Antell Shampoo, and Hexachlorophene Soap are said to be deceptively advertised through newspapers, radio and TV, according to an F.T.C. complaint. Claims alleged to be false include: (1) that the main ingredient of Charles Antell Formula No. 9 is lanolin and the lanolin present is of full strength and potency; (2) that lanolin is the only natural oil or grease that is absorbed by the hair and scalp; (3) that Formula No. 9 will loosen the scalp; (4) that its use will cause the hair to curl; (5) that it will prevent the loss of hair and baldness.

Questioned also are the claims that Charles Antell Shampoo contains substantial quantities of lanolin and that the hormones contained in the product clean or aid in the cleaning of the hair and scalp and that Hexachlorophene Soap (a) will remove twenty-five times more dirt and other foreign matter from the skin than ordinary soap, and (b) will prevent the development of impetigo and cradle cap in the case of babies, and pimples, boils, blackheads or other skin blemishes of external origin generally.

Revitalizing the FTC

A revitalizing of the Federal Trade Commission is necessary to speed up disposition of cases and to aid the antitrust problems of small business, said FTC Chairman Edward F. Howrey last month in his first public address since he was named chairman of the commission. Commissioner Howrey stressed that:

"The FTC seeks compliance to antitrust laws, not punishment. In order to accomplish this, the lawyers, economists, and accountants representing the commission must approach each case in the spirit of fair play. They must be governed by the statute and the facts of the particular case, not by preconceived ideologies or theories." He pointed out that "representatives of business must approach the problem in the same spirit. They must place public interest ahead of private advantage."

Improvements of the commission's operation which he said that he was suggesting to the commission are:

(1) Revitalizing of the commission's Bureau of Industrial Economics in order to provide for greater cohesion of legal and economic concepts of competition and monopoly.

(2) Attaching of economic advisers to the commission to perform economic functions, in the same manner that the general counsel performs legal functions.

(3) Establishment of an advisory committee on cost justification, consisting of accountants, economists and lawyers representing all viewpoints. This would be done to take away some of "the mystery and ignorance, both in industry and government, which surround distribution costs. It would enable business to comply more easily with the laws."

(4) Establishment of a Bureau of Consultation, with one of its main functions to be that of cooperating directly with small businesses. Commenting on this, Howrey declared that: "Small business has an essential economic and human role in American life. All inequitable handicaps should be eliminated, so that small firms may grow in a healthy way and compete more effectively with their bigger competitors."

(5) A survey of the management and operation of the commission in order to increase efficiency and thus make it possible to dispose of cases more quickly.

B_{12} from Sewage Moves Ahead

The Milwaukee Sewerage Commission and the Vern E. Alden Company, Chicago engineers, have entered into an agreement under which vitamin B_{12} concentrate will be produced from Milorganite, which is the dried and disinfected sewage sludge from the Milwaukee municipal sewage disposal plant. The name is coined from the words Milwaukee organic nitrogen. The vitamin concentrate first produced will be marketed as a supplement to animal and poultry feeds. The agreement provides that Alden shall build a pilot plant to double-check on the patented process developed by the commission's research consultants for extraction of valuable vitamin concentrates from Milorganite. The pilot plant will be built in the Chicago area within sixty days and operated for three months on a small scale at a cost of only $25,000. The commission will supply the plant with forty to ninety tons of Milorganite for processing. After sufficient vitamin B_{12} concentrate has been produced, Alden will demonstrate it to potential users and make a market survey.

Buyer not Responsible for Low Prices

The United States Supreme Court last month overruled the Federal Trade Commission theory that the burden of proof for the seller's justification of the discrimination because of price differentials was on the buyer. The decision came in the 10-year old Automatic Canteen Co. case, and the court said that the FTC decision would put every buyer "at his peril" if he attempted to bargain with sellers for price reductions. The court made two findings:

1. The buyer has not violated the law if the lower prices he induced can be cost-justified or, even if they cannot, he does not know that the prices are illegal on the part of the seller.

2. It is up to the commission—not the accused buyer—to furnish proof to support a charge of violation even where it is obvious on the facts that the buyer knew he was getting price cuts.

The court stated, "Certainly the Commission with its broad powers of investigation and subpoena . . . is on a better footing to obtain this information than the buyer . . . ; the Commission may in many instances find it not inconvenient to join the offending seller in the proceedings."

Drugs as Tumor Inhibitors

by Dr. J. L. Boyle
EDINBURGH, SCOTLAND

GORO PHOTO

The problem of cancer occupies first place in the thoughts and work of many medical and scientific researchers. It is a problem that is liable to affect closely one's own life, has many facets, and which calls out the forces of science in many branches. It differs markedly from the problems presented by bacterial infections. Bacteria are independent organisms and the body can be immunized against them or treatment given which will suppress them; it is not necessary to have a full understanding of the structure of the invading bacterial cell or of the details of its private life. But, cancer cells are very similar to the normal cells that form the tissues of the body and, consequently, it is more difficult to destroy the one without adversely affecting the other. Both malignant cells and normal cells appear to possess the same system for protein formation in the nucleus and in the cytoplasm but, in the case of the former, a disturbance occurs in the center which regulates the rate of growth and they multiply rapidly, so producing a tumor. Because the reason for this departure from normality on the part of the tumor cells cannot yet be explained, it seems that a more fundamental approach to this problem is needed, than in the problems of bacterial infection.

Tumors may be either benign or malignant; the former can be removed completely by surgery but the latter possesses the property of spreading through the blood and lymph or by infiltration into surrounding tissues and may give rise to secondary growths, called metastases. This difference is probably related to some aspect which is still unknown to us, of the functioning of the living cell and emphasizes the need for a fundamental approach.

In the past, much attention has been paid to those chemical substances which stimulate tumor growth within living tissues. But frequently it has been found that the same biological response has been called forth by substances with apparently nothing else in common and it may be that a more fruitful understanding of the cancer problem will follow the clarification of the mechanism involved in cellular growth. The difference between a normal and a malignant tissue cell is one of behavior rather than of substance and the significant fact about it is, that it is an irreversible change so far as the present level of knowledge can inform us. The most helpful theory about the difference is that the transition from the normal to the malignant state is due to a modification of some cell component probably within the nucleus, which may be caused by a carcinogen, and that this modified cell remains latent until it is stimulated into active growth by some other agency. At growth, it transmits the modification to its progeny. It has been deduced that such an auto-reproductive

factor is likely to be associated with the nucleoproteins that are part of the macromolecules which make up the living cell and, by studying them, a method may be discovered of modifying them a second time in such a way as to reverse the transition to malignancy.

These macromolecules are made up of polypeptide chains which contain reactive groups at regular intervals on the repeating units that comprise the chains. It is conceivable that if another polymeric molecule carrying reactive groups at appropriate intervals along its chain, is presented to the cellular aggregate and if the two sets of reactive groups are oppositely charged, then combination between them may take place. The resultant attachment of such polymer units, by regularly spaced bonds, to the nucleophylic centers of cellular proteins would be expected to bring about a great change in the physical and chemical properties of the cell. It is suggested[1] that a process of this nature underlies the specific biological activity of a series of compounds which are now being applied to the treatment of cancer.

T. E. M.

This group is known as the ethyleneimines and the member which has been selected for clinical use, as the most effective, is triethylene melamine or T.E.M. The background to this discovery is interesting. In 1945, it was reported that certain carbamates had a toxic action on particular cells in cereal seedlings, and this prompted an investigation of their effect on tumor growths in mammals. It was found that urethane was the most active of these compounds though it was inactive against cereals. Its mode of action is still obscure but speculation on this point led to the idea that the property of having a specific toxic action on cells may be connected with the power to combine with the amino group in proteins. The search for compounds, with this property, which could be used to test the hypothesis, turned attention to those substances that are used, or have been tried out, as textile auxiliaries. Some of them rely for their effectiveness on their ability to combine with centers of activity in the polycellobiose and polypeptide chains which compose textiles, like cotton and wool. They are usually substances with functional groups which permit them to form polymeric units and it was surmized that they might combine to give cellular complexes when brought into contact with animal tissue, just as they do with textile fibers. Though this theoretical basis of selection did not always lead to the results that were expected, it did uncover some interesting substances, from the point of view of tumor inhibition.

The one which has survived the rigorous course of study, and has become recognized as a mode of treatment for one variety of cancer, is T.E.M., originally prepared in order to improve the finish of rayon fabrics by making them more crease resistant. Like the other drugs mentioned later in this report, T.E.M. is used to treat Leukemia—a form of cancer of the blood which is characterized by an uncontrolled proliferation of the white blood cells. They do not cure the disease for there is, as yet, no cure for this disease. But they retard the rate of growth of tumors and allow the patient an interval of, almost, normality which may continue for 80 to 90 per cent of the survival time.

T.E.M. may be administered by the intravenous route but it has the advantage that it is also active when given orally. Part of its value lies in the fact that it is most active against those malignant cells associated with the lymph whereas other drugs usually are more successful against a form of the disease connected with cells of bone marrow. Again as with the other therapeutic treatments for this disease, the limiting factor is that it is injurious also to the normal blood-forming process and, for this reason, careful regulation of dosage is necessary.

Myleran

For nearly ten years now, the war gases known as nitrogen mustards have been used in clinical practice to inhibit tumor growth. The discovery of their effect on cellular metabolism followed an explosion in which they were involved on a warship in 1943. Subsequent examination of the affected personnel suggested that these compounds might be useful in retarding tumor growth. However, they have some disadvantages and are no longer considered to be as promising as it was originally hoped they might become. In an effort to enhance their activity, the formula was modified by replacing an alkyl with an aromatic group. This was not very successful but it raised, in the minds of the researchers[2], the possibility that the activity of such compounds was due to their ability to alkylate, that is to become linked through an ester-type of bond to some cellular constituent. To test this surmise, a series of esters having this property was prepared. Of these, only the sulfonic acid esters turned out to be active tumor inhibitors, though they were of no clinical use for other reasons. It now seemed that the relation between chemical constitution and biological activity—in this case inhibition of tumor growth—could most fruitfully be studied by starting with the simplest chemical structure.

The general formula of the group chosen for study was $CH_3SO_3(CH_2)_nSO_3CH_3$ and the change in potency was noted as the value of n was increased. According to the theory, the $(SO_3.CH_3)$ groups are functional, that is to say, it is through them the link between cellular substance and therapeutic agent takes place. Earlier experiments had shown that at least two functional groups were necessary for cytotoxic activity. Consequently, the chemical composition of this group was of the utmost simplicity consistent with the purpose in view. Rather surprisingly, an early member of the series showed an intense inhibitory effect on experimental tumors. This compound, which is now called Myleran, has the formula $CH_3SO_3.(CH_2)_2.SO_3CH_3$.

In chronic leukemia associated with the bone marrow,

(Continued on page 118)

Cosmetic Aerosols

by R. C. DOWNING and E. G. YOUNG

KINETIC CHEMICALS DIVISION,
E. I. DU PONT DE NEMOURS & CO., WILMIMGTON.

A decade ago the word "aerosol" was confined to the vocabulary of the physical chemist and to him it means a cloud of solid or liquid particles so finely divided that they will float in the air. Today the term "aerosol" is used freely by a vast majority of the American public. To them it means a more convenient and economical way of doing many household or personal tasks. It has come to represent one of the technical advances offered to the public as a result of productive scientific endeavor.

The aerosol industry has grown rapidly in size and diversity. The aerosol insecticide was originally developed for the armed forces but has found wide acceptance in the civilian market as well. The aerosol idea has now been successfully applied to nearly forty different types of products and it is estimated that 150,000,000 units will be produced in 1953—a growth of 50 per cent over 1952. Of this number, about half are expected to be personal products such as shaving lather, hair lacquer, sun tan oils, personal deodorants, colognes, burn remedies and foot sprays (see Figure 1).

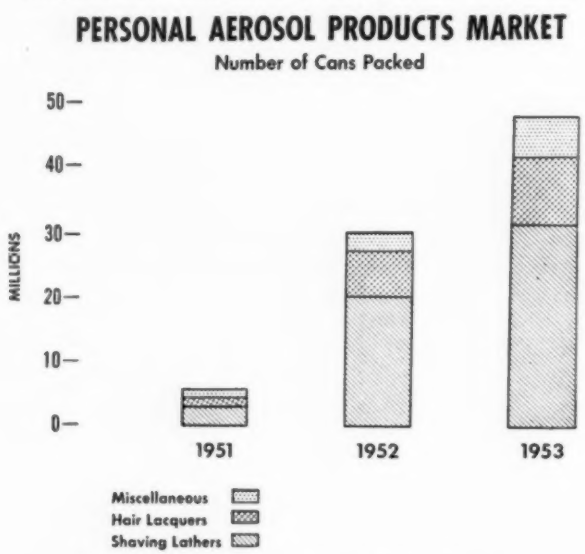


Fig. 1—Market Growth for personal aerosol products.

It is evident that this type of product has been well received by the consuming public and now represents a very important part of the total aerosol industry.

A recent survey* of retail stores provides an interesting source of information about the aerosol market. Personal aerosol products are sold chiefly through department, drug and grocery stores as shown in Figure 2.

*The survey is available from the Kinetic Chemicals Division of E. I. du Pont de Nemours & Company, Wilmington, Delaware.

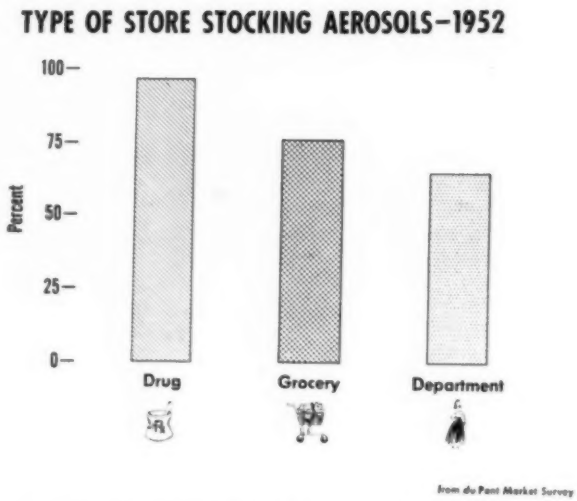


Fig. 2—Principal retail outlets for personal aerosol products.

PHOTO COURTESY E. I. DU PONT DE NEMOURS & CO.

The most popular product of this type is shaving lather and in 1952, 88 per cent of the drug stores included in the survey carried aerosol shaving lather. It was reported that 10 per cent of shaving cream sales were of the aerosol variety. By year-end there were many iso-

Fig. 3—Types of containers used in packaging various personal aerosol products.

lated reports that this percentage had increased to 20 per cent. The second most popular personal aerosol carried by these same stores was the aerosol hair lacquer. The survey showed about 70 per cent coverage and 39 per cent of the hair lacquer sales were in aerosol packages. A smaller but increasing percentage of drug stores carry other types of personal aerosol products and it is expected that the variety of formulations and the number of retail outlets will continue to grow.

The development of a successful aerosol product depends on a number of factors. The formulation must be especially designed for the purpose, a suitable container and valve must be selected and loading tech-

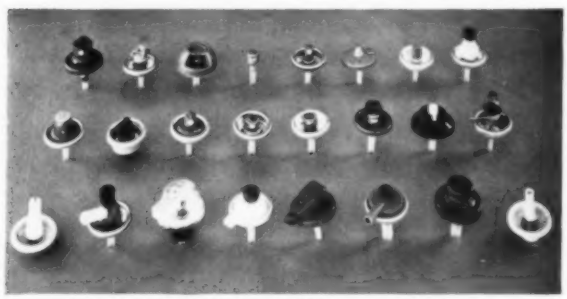


Fig. 4—Valve styles available for aerosol products.

niques must be worked out. It is especially important in the sale of personal products that the package have a pleasing appearance. Although the number of different containers available for aerosol use is somewhat limited, much can be done with the design and arrangement of labels or lithographed exteriors. Most of the commonly used containers are made of steel and may be tinned or lined with a polymeric coating. Some specialty products are packaged in aluminum or glass. A variety of aerosol containers are illustrated in Figure 3. The valve plays an important part in the completed package, not only from the standpoint of appearance, but especially because of its effect on the way in which the product is dispensed. A number of different valve styles are available and are illustrated in Figure 4.

The development of a satisfactory formulation, however, is the primary and most important step in working out the details of an aerosol product and the rest of this discussion is centered around formulation problems.

Aerosol Formulation

Each different type of aerosol product has its own formulation problems and must be individually studied in the laboratory. Even so, the formulation problems have much in common and observations on one product may lead to generalizations applicable to various other products. In the laboratory study of an aerosol formulation, answers must be obtained for questions of compatibility, pressure, spray character and corrosion.

Compatibility

Usable formulations may range from complete solubility to systems containing immiscible liquids. Several representative types of personal aerosol products are illustrated in Figure 5. In colognes, sun tan oils or

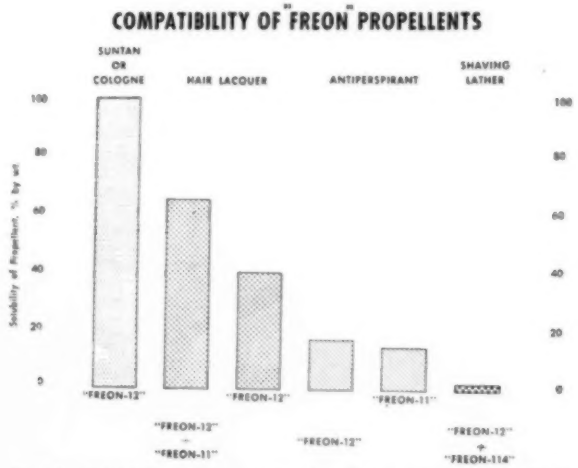


Fig. 5—Solubility of "Freon" fluorinated hydrocarbon propellents in representative formulations.

room fresheners the essential oil concentrates are generally soluble in the propellent and clear uniform solutions are obtained. In most cases a small amount of alcohol, odorless hydrocarbon or other solvent is used as a base or carrier for the active ingredients and to help in dissolving them. This type of formulation often contains a fairly large amount of propellent in order to get the right effect.

Hair lacquer preparations illustrate a condition of limited compatibility. In this case the active material—the wax or shellac—is not in solution but is dispersed or suspended in the base solvent. The propellent is mis-

(*Continued on page 106*)

Up to Date on Vitamin A (PART III)

by Milton A. Lesser

The therapeutic indications for vitamin A are constantly being extended. In addition to its established use in the treatment of vitamin A deficiency and associated symptoms and as a supplement in various conditions involving restricted diets, there are a number of disorders in which vitamin A is administered as a therapeutic adjunct.

Dermatologists continue to report that vitamin A is a valuable aid in the treatment of various skin conditions. It is effective, of course, in the therapy of certain types of hyperkeratosis of the skin in persons with vitamin A deficiency. The administration of large doses of vitamin A is finding acceptance as a general measure for the treatment of acne,[38] and several newer reports have further confirmed its value for this purpose.

Thus, Combes and his associates[39] reported that 29 of 36 patients with various types of acne showed pronounced improvement when given 100,000 units of vitamin A daily for three to 24 months. Savitt and Obermeyer[40] found that, of 35 college students with acne who were given vitamin A, 20 showed improvement, 12 had no change, and three suffered an increase in the severity of the eruption. Goldman[41] considers large doses of vitamin A to be of value in acne of the young, especially when the comedo phase is excessive. Dosage should be individualized, but it is noted that the water-miscible vitamin A mixtures lend themselves readily to this type of treatment.

In Kline's[42] study, a multivitamin preparation containing vitamin A was given intramuscularly to 25 patients with acne. The results were "excellent" and many cases unresponsive to the usual therapeutic procedures showed prompt and consistent progress. The solution was well tolerated in over 500 injections.

Vitamin A has also been used topically in the treatment of acne vulgaris. For such therapy, Lubowe[43] suggests the use of a foundation lotion containing 1,000 units of vitamin A, five per cent of sulfur, two percent of resorcin and one per cent of an antibiotic in a base consisting of equal parts of zinc oxide, talcum and propylene glycol. A pigment preparation may be used to give the desired shade.

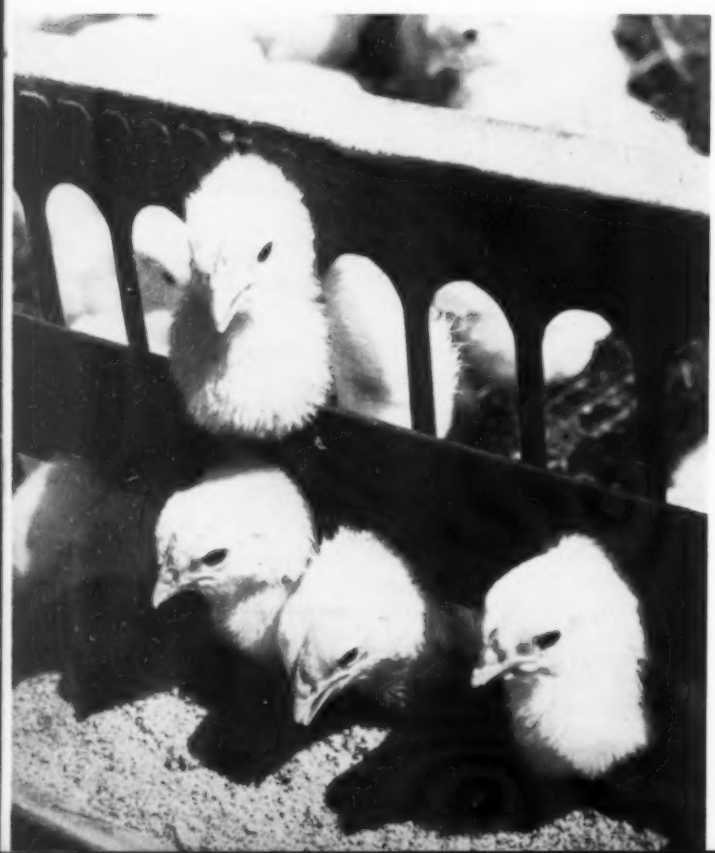
Other dermatologic lesions may also be favorably influenced by vitamin A.[44] According to Savitt and Obermeyer,[40] seven of 11 patients with senile keratosis showed improvement after treatment with vitamin A capsules. Two of three additional patients with arsenical keratosis likewise responded favorably to the vitamin therapy.

In their new text on dermatology, Sulzberger and Wolf[38] say that they have the impression that vitamin A is an effective form of general medication for certain dry skins, provided large doses, ranging from 60,000 to 100,000 units daily, can be given for several months. These authorities also state that in chronic eczema of patients with dry, hyperkeratotic skins, the administration of vitamin A may prove beneficial in some cases.

Synthetic vitamin A palmitate has proved valuable in the treatment of eczema in children allergic to fish liver oil. Six of the 10 children treated by Stoesser and Nelson[45] showed marked improvement of their eczema, with a decrease in the dryness of the skin. Three other children showed some degree of improvement.

As noted previously, vitamin A is incorporated in topically applied preparations for treating dermatologic conditions. Ointments containing vitamin A and D or cod liver oil have long been used on irritations,

BLACK STAR PHOTO



fissures, ulcerations, diaper rash and other lesions to provide a soothing effect and hasten epithelization and healing. Grill[46] is of the opinion that, because of lack of odor and other advantages, synthetic vitamin A should lend itself readily to the preparation of ointments for therapeutic use. He suggests that the synthetic types could easily be incorporated into various ointment bases, such as emulsions of the water-in-oil type, or dispensed with the usual ointment vehicles such as lanolin or petrolatum. Of interest in this connection, is the suggestion[43] that a vitamin A and D dermatologic ointment may be made from:

Vitamin A	**150,000 units**
Vitamin D	**50,000 units**
Lanolin, anhydrous	**10.0 Gm.**
Hydrophilic petrolatum, U.S.P., to make	**100.0 Gm.**

Grill also points out that the notable advantage of lack of odor and taste makes synthetic vitamin A adaptable to cosmetics of certain types. It is not too much to expect, says he, that vitamin A will be incorporated in certain kinds of hair oils, lotions, creams and other cosmetics of this general class. Of course, attempts have been made in the past to market cosmetics containing natural vitamin A oils or concentrates, but their hard-to-cover odor militated against their wide popularity.

Lubowe[43] reports that vitamin A, incorporated in cosmetic creams and lip pomades in a concentration of 10,000 units per Gm., has been studied for its topical effect on the skin and mucous membrane of rabbits and hamsters. After continuous daily application of these preparations for periods of three to four weeks, histological sections were made and the increase in the size of the epidermis was noted. This increase varied from two to three times above that of the normal tissue. In his discussion, Labowe also presents the following vitamin A-containing all-purpose cream:

Vitamin A	**100,000 units**
Surface active agent (Duponol*)	**1.0 Gm.**
Sesame oil	**10.0 Gm.**
Hydrophilic ointment, U.S.P., to make	**100.0 Gm.**

(*E. Du Pont de Nemours & Co., Wilmington, Del.)

In discussing the usefulness of vitamin A in emollient and similar cosmetic creams, Doubleday[47] states that the vitamin can be very beneficial, provided it is present in a high enough concentration. He incorporated 2,000 units per Gm. of vitamin A in his preparations. He also stressed that the packages must be air-tight and light-proof and that a vitamin A cream needs an antioxidant that will not irritate the skin.

As already indicated, the eye is also an important center for vitamin A activity. A characteristic eye disease, called xerophthalmia, results from a deficiency of this nutrient. One of the first clinical symptoms of vitamin A deficiency is nyctalopia and the vitamin is a specific for this type of night blindness.[48] In addition to its importance in these conditions, vitamin A has proved beneficial in other eye disorders. Hickey[49] employs 50,000 to 100,000 units of vitamin A daily for several weeks for the treatment and prevention of chalazion, a condition characterized by a small tumor of the border of the eyelid. Atkinson,[50] who believes that "senile" cataract is a preventable disease, prescribes 200,000 units of vitamin A daily as part of his treatment for this eye condition.

The last few years have seen the publication of additional reports on the value of vitamin A in the therapy of ear conditions, notably deafness and tinnitis. Anderson and his colleagues[51] reported that 15 of 30 patients with varying degrees of deafness and some with tinnitis showed definite subjective and objective improvement at the end of six weeks of intramuscular injection of a preparation containing 50,000 units of vitamin A. Of 24 patients with progressive deafness treated by Bau and Savitt[52] with intramuscular injections of vitamin A, 16 showed benefit. Of nine patients who complained of severe tinnitis, six were improved by vitamin A injections.

Baron,[53] however, was not able to obtain comparable results. He therefore concluded that vitamin A administered intramuscularly for the treatment of deafness and tinnitis showed no superiority over other currently available forms of therapy.

More recently, Jacobson[54] has been granted a patent for a benzyl cinnamate—vitamin A composition that is suitable for the treatment by injection of deafness and tinnitis due to inflammatory lesions.

In 1950, considerable interest was aroused by a new approach to the treatment of premenstrual tension through the use of large doses of vitamin A. In studies on 30 patients with this condition, Argonz and Abinzano[55] administered 100,000 units of vitamin A orally twice daily, after lunch and after dinner. Treatment was begun on the fifteenth day of the cycle and was continued through the first day of menstruation. It was resumed 15 days later, for a total period of from two to six months. Significant improvement was obtained in the majority of patients, as shown by the disappearance of mastodynia, decrease or disappearance of mammary nodules, decrease of abdominal pain, disappearance of edema and great improvement in nervous disorders. This improvement continued after cessation of the therapy, and the disturbing symptoms did not reappear during the year following the beginning of treatment. The symptoms remained unchanged when placebos were given. Though unable to explain, the mechanism by which vitamin A produced its effect, Argonz and Abinzano offered the hypothesis that the vitamin acts by modifying a derangement in the metabolism of estrogens.

Urologists have found that vitamin A has a valuable place in the management of patients with urinary calculi. Although its role is not fully understood, it is believed that vitamin A deficiency is a major factor in

(Continued on page 112)

COURTESY HARRIET HUBBARD AYER

Massage Creams

by Harry Hilfer

Massage creams are preparations whose popularity depends on their ability to be used in conjunction with hand massages of the body or the face. Their function therefore is subservient to the primary mechanical hand massage operation and should be designed with this idea in mind.

The function of a massage is two-fold—it first acts as a means of exercising otherwise inactive muscles and therefore improving the appearance of the skin and secondly, acts to increase the blood circulation in the area treated so that the skin color becomes better. These functions may be accomplished by patting and slapping of the skin but there is a greater amount of comfort when a lubricating agency is used in conjunction with this process to prevent irritation due to stretching of the skin because of too great an amount of friction caused by skin to skin contact.

Massage creams may therefore be thought of as lubricating agencies to aid in the comfortable massaging of the skin. In order to provide the proper lubricating effects heavier bodied creams should be used for body massages where the treatment is usually more vigorous than should be used for the face.

The earliest types of massage creams were substantially anhydrous mixtures of oils and waxes, consisting generally of hydrogenated lard, beeswax, mineral oils

and paraffin waxes among other substances. The concentration of waxes was raised for the heavier types and a good viscosity control was introduced by a mineral oil of the desired viscosity. Substances such as ozokerite were, and are still, employed because of their amorphous characteristics which enable preparations in which they are incorporated to appear soft though their melting points are quite high. In addition the use of ozokerite tends toward a decrease of thixotropy and therefore a lesser tendency toward melting with pressure.

This characteristic may best be illustrated by comparison with a highly crystalline wax such as spermaceti, which has a relatively low melting point. Its crystalline structure however, serves to introduce a false stiffness to preparations where used which is easily broken down with slight pressure. Ozokerite, however, does not appreciably impart any such body nor does it seem to change character with pressure to the extent that spermaceti does.

In the formulation of massage creams of the anhydrous type, mixtures of waxes—both microcrystalline and macrocrystalline should be employed so that the cream could set up to a desired consistency, and so that a control could be kept on the extent of liquefaction that would take place when in use.

These same basic precepts obtain in the formulation of the more modern creams. The principal difference is in the development of an emulsion rather than an anhydrous mixture. The reason for this lies in the greater stability of emulsions to heat their oil and wax intermixtures. A basic cold cream formula could be altered by substitution of ozokerite for a portion of the oils used to form a stable emulsion, with all the desired properties of a massage cream. In addition after the massaging operation has been completed the film may be easily washed off because of the presence of the emulsifiers.

Massage creams may not necessarily be limited to the cream form, since liquid emulsions having the desirable characteristics may also be formulated. In preparations of this type a water-in-oil or oil-in-water emulsion is equally effective since this cream is used only as an adjunct for the massage. The lotions may be prepared in much the same way as hand lotions though a somewhat higher concentration of oil should be incorporated. Viscosity characterization may be incorporated by the judicious use of gums. Sodium carboxymethyl cellulose is a good example.

Many of the massage creams may contain substances which are intended to add stimuli in addition to the mechanical hand massage. These substances are usually mild irritants which cause increased blood circulation to the skin. The author feels however that these be best avoided since mechanical massage is capable of as good activity.

A further advantage of the emulsion type of massage cream is the greater ease with which substances other than oils and waxes whose primary purpose is for lubrication, may be incorporated into the serum. For example in some special cases it may be desirable to incorporate a humectant, which obviously would be easier in an emulsion. With the present tendency towards the incorporation of bacteriostatic compounds into cosmetic products the emulsion would be the easiest means of introducing it effectively since these agencies as a rule function only in the presence of water.

The cream need not be a cold cream type of product. This form was mentioned only as an example of an emulsion capable of incorporation of relatively large amounts of oils and waxes. Many of the newer synthetic emulsifiers are capable of forming emulsions also containing sizable amounts of lubricants. In addition with the newer tendency towards adjustment of the pH of the product towards a slightly acidic pH in conformity with the pH of the skin mantle, the use of a soap as an emulsifier is precluded. Sulfated alcohols and

COURTESY HELENA RUBINSTEIN

other types of emulsifiers are capable of good performance in this direction. The use of the emulsion is therefore capable of endowing the cream with properties other than and in addition to the lubrication properties primarily desired of it.

Liquid emulsions in some respects are capable of greater versatility than are the creams. Incorporation of many of the cellulose or natural gums provide a better means of viscosity control under massage pressure than do most oils and waxes without such an addition. A thick heavy liquid and pourable cream is probably more easily used and applied as well.

These lotions may easily be prepared with a pH of 5.5-6.0 in which may be incorporated enough methyl cellulose or other gums to provide a good viscosity for the oils used as the lubrication medium. A glyceryl monostearate emulsion in conjunction with emulsifiers which would be dependent on the desired pH and a suitable gum—is capable of fairly large incorporation of a liquid phase, while the viscosity may be controlled by the type and the quantity of gum.

Shampoo Formulation*

COURTESY PROCTER & GAMBLE

by H. W. Zussman

ALROSE CHEMICAL CO., PROVIDENCE, R. I.

The more obvious purpose of a shampoo is to clean the hair and scalp. The average toilet soap will, however, clean the hair just as well as the average commercial shampoo at least in soft water, while the newer synthetic toilet soaps may be expected to perform equally well in hard water. The comparatively high-priced shampoo must therefore offer the consumer something more than does an inexpensive bar of toilet soap. A shampoo, after all, is a special purpose product. Not only is it a detergent but it is a cosmetic as well. The catchwords most commonly employed in shampoo advertising only occasionally refer to cleaning action but rather stress lustre, softness, manageability, beautifying.

The cosmetic chemist, for his part, is above all concerned with this aspect of shampoo formulation and with problems related to packaging and physical characteristics. There have been few or no innovations in recent years in shampoo bases. Lauryl sulfate, coconut soap and sulfated fatty glycerides are still preferred. Emphasis in formulation has shifted gradually to secondary ingredients, the little bit of this or the little bit of that which presumably makes one shampoo better or at least different from the next one. These ingredients include both esoteric synthetic chemicals and such mundane materials as milk, eggs and even beer and coffee. While the sophisticated and cynical may look at these as devices merely to entice the less discriminating, these materials may very well serve a useful purpose and, at any rate, are legitimate devices to insure individuality in an industry where individuality is always at a premium.

One simple way of establishing brand identity is to make the shampoo look different. Shampoos are now obtainable in bottles, tubes, cans and jars; shampoos are clear, transparent, opalescent and opaque; they are dispensed as liquid, gels, creams and aerosols, while some of the older products are still available in bar form. The unusual variety of shampoos now available is, of course, symptomatic of the competitive character of the shampoo field; on the other hand, the problem of incorporating poorly soluble finishing ingredients has been responsible to some extent for increased interest in opaque and cream type products. Conversely, packaging considerations have developed requirements for new ingredients.

The aerosol package, for example, has introduced halogenated hydrocarbon propellents hitherto unknown in the cosmetic industry as well as a need for corrosion inhibitors previously of little importance in shampoo formulation. Cream shampoos require opaci-

*Delivered before Scientific Section, Toilet Goods Association, May 14, 1953.

fying agents such as stearyl alcohol, cetyl alcohol and their sulfates, alkaline earth stearates, polyethyleneglycol stearates and magnesium silicate. Sparkling clear shampoos require clarifying agents to prevent turbidity due to poorly soluble organic constituents and to iron and alkaline earths. Inorganic insolubles are dissolved and sequestered by metal complexing agents such as ethylenediamine tetra-acetic acid. Organic materials causing cloudiness may be high molecular weight alkyl sulfates or high titre soaps, but more likely finishing ingredients such as lanolin or mineral oil which tend to come out of solution in some cases as the temperature decreases, occasionally as the temperature increases. Such problems are best treated by the addition of solvents or surface active solubilizing agents and hydrotropes. Among the latter group are the polyethylene oxide fatty derivatives, fatty alkylolamides, sodium xylene sulfonate, short chain alkyl naphthalene sulfonates, benzoates and phthalates.

Viscosity

Body (or viscosity) in shampoo is generally a desirable characteristic. While gums and cellulose derivatives have been used for such purposes in the past, they have been largely supplanted because of their undesirable film-forming properties. Typical of the newer thickening agents used are the diethanolamine lauric acid condensates which will thicken lauryl sulfate solution on the addition of small amounts of organic acid. The alkylolamides may also be used as bases for transparent shampoo gels by neutralizing the excess alkylolamine present with lauric acid.

A special problem in soap shampoo formulation is that of building in hard water resistance. This can be done reasonably well by the use of sequestrants and lime soap dispersants.[5] Ethylenediamine tetra-acetic acid is incorporated in relatively small quantities to enhance lather during the actual shampooing while alkylolamides and ethylene oxide condensates are incorporated to prevent deposition of lime soap on the hair during the rinse operation.

In synthetic shampoos, a special problem is posed by their drying action, due probably both to excessive defatting and to adsorption of scroop-producing surface active agents on the hair and scalp.[5] Considerable interest in anti-drying agents has developed in recent years, especially abroad, and a variety of materials have been suggested as useful in this connection. These include products such as highly sulfonated castor oil, carboxymethylcellulose, lanolin, lecithin, protein and polypeptides, amino acids and their fatty acid condensates, tannins and certain synthetic tanning agents of the aromatic sulfonamide type. As the drying effect is to some degree a subjective experience, it does not easily lend itself to experimental investigation. It is quite likely, however, that considerable progress will be made in this direction during the next few years.

Of more general interest in shampoo formulations of all types are the foam stabilizing agents, compounds which are added as two per cent to 10 per cent of the weight of lauryl sulfate or soap to obtain flash foam and quick lathering on oily scalps. The sensitivity of lauryl sulfate foam to soil may be illustrated by beating up a lather in a Waring Blendor, first in distilled water and then in the presence of lard oil or preferably wool grease. Presumably, detergent used up in emulsifying soil is not available at the air-liquid interface for foaming. Adsorption on the hair and scalp also removes the foaming agent from the solution. Here again, the alkylolamides, particularly monoethanolamine, monoisopropanolamine and high purity diethanolamine condensates of lauric acid, are satisfactory.

Germicidal agents have attracted some attention as shampoo ingredients, although there is some question as to just how effective these may actually be in view of the fact that shampoos are not usually used daily. Among the older compounds used in shampoos are the cresylics and 8-hydroxyquinoline. Chlorinated derivatives of dihydroxy diphenyl methane, dihydroxy diphenyl sulfide and xylenols have attained some prominence for this application in recent years.

Finishing

The major problem in shampoo formulation is that of finishing the hair. What can be done about lustre, softness, lubricity and manageability? It is doubtful that these effects are obtainable with immaculately clean hair or that hair can be completely clean under practical conditions even if desired. As in the finishing of textile fibres, finishing of the hair requires modification or building up of a new fibre surface. This is more readily accomplished not in the shampoo itself but in a separate operation with so-called hair conditioners, many of which enjoy sizable consumer acceptance. It would, of course, be preferable to combine the hair conditioning operation with shampooing. When this is attempted, however, the finishing effect is greatly diminished.

Finishing agents are usually of a fatty nature. The hair conditioners on the market are generally emulsions of mineral oil, lanolin, stearic acid esters, lecithin, fatty alcohols, aluminum or magnesium stearates or quaternary ammonium compounds. Diethanolamine stearic acid condensates are also widely used for this purpose, although at acid pH where these are most effective, rearrangement to cationic amine ester occurs.[2] These conditioning agents are applied to the hair, then combed out. Rinsing is recommended in such cases where the active ingredient is sufficiently substantive and adherent to the hair to resist washing out.

There has been nothing published on the physical properties of hair fibres treated with compounds of this type. Some work in related fields may be of some interest at least in indicating the variety of effects which may be produced. Moss[4] has studied the lubricating action of various fatty alcohols, fatty acids, fatty acid esters and hydrocarbons on cellulose fibres. With the more effective fatty derivatives, maximum lubrication is attained at concentrations as low as 0.1 per cent on

(*Continued on page 106*)

Proprietary Association Meeting

E. T. T. WILLIAMS, RE-ELECTED PRESIDENT

"The description of the modern proprietary product can be summarized by saying it is a drug that has been so formulated, and labeled with such complete directions, that the layman can use it safely and effectively for the relief of minor ailments and discomforts," said Charles W. Crawford, Commissioner of Food and Drugs, in addressing the 71st annual meeting of the Proprietary Association at White Sulphur Springs last month. Commissioner Crawford said further:

"Why is it that the so-called restrictive requirements have so often turned out good for business? Fundamentally I suppose it is because a requirement good enough to get enacted into law is generally something that the customers want, or is helpful to them. Customer satisfaction is certainly good for business. Labeling which does not over-sell the customer (with subsequent disappointment)—labeling which enables the customer to use a product safely and effectively, promotes customer satisfaction.

"We know that there are still some who regard label warnings against misuse as a handicap to proprietary sales. More and more, however, warnings are becoming accepted as the part of a sales job—the job of playing fair with the customer. Our observations indicate that warnings against misuse actually engender confidence that a product can be used safely and effectively by following the directions.

"Over the years it has been demonstrated repeatedly that lasting success in the drug industry cannot be had by over-promotion, promising the customer more than is reasonable, leading him to eventual disappointment and possibly to serious consequences which follow when the patient really needs professional medical care. As a general principle we may say that the greater the excesses in promotion the shorter the life of the business.

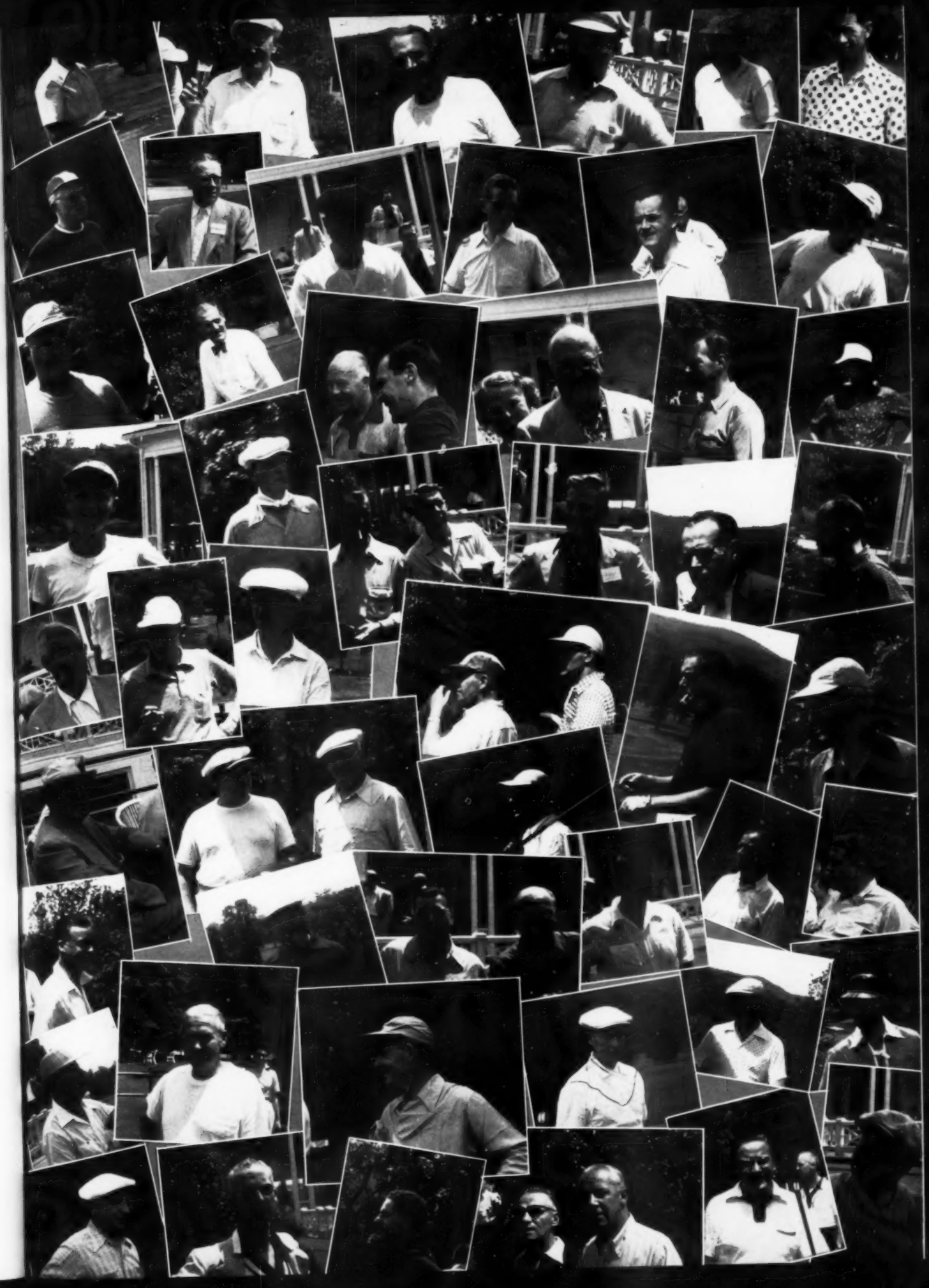
"If confidence and satisfaction are the pillars of success in the business world, then in the proprietary business the foundation of pillars is safety and effectiveness. For underlying confidence is safety, and underlying satisfaction is effectiveness.

"From time to time we have heard the complaint that new drugs are too often restricted to prescription sales and that this narrows the field of opportunity for proprietaries. Of course there has been a considerable number of new drugs that are now being used in proprietary products, although the number is very much less than those which are confined to prescription sale. There has been, however, a most important compensation for the proprietary industry in this regard. The industry is fortunate indeed that these powerful new therapeutic agents have generally been kept out of proprietaries because of the very serious consequences which would have resulted if they had been freely available for indiscriminate sale. Think what the consequences would have been if hormones, sulfonamides, and antibiotics had been widely available for self medication.

"I envisage some change in the Robinson-Patman Act—if not in the statute itself, then a change in the administration of it," James F. Hoge, general counsel for the association, told the meeting. "That Act . . . was designed to further the mission of its parent Acts (the Sherman and Clayton Acts) in maintaining competition. But the administration of it in the past fifteen years has tended more to prevent than to encourage competition. Where its parent Acts laid the emphasis on "competition," this child prodigy—at least under its tutelage—has put the emphasis on "competitors." And the kind and degree of protection which it has sought to give competitors has been at the expense of competition and has made for rigidity rather than fluidity of distribution. Unless there is a change in this, distribution of your products will become the more restricted.

"Perhaps I should tie in the Federal Food, Drug, and Cosmetic Act which exerts restrictive influences

(Continued on page 127)



EWING GALLOWAY

Human Hazards of Drugs Fed to Animals*

Henry E. Moskey, V.M.D.
FOOD AND DRUG ADMINISTRATION
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Shortly after the passage of the Federal Food, Drug, and Cosmetic Act on June 25, 1938, the Food and Drug Administration began to receive new-drug applications pursuant to section 505 of the Act for new drugs as defined by section 201(p) and the regulations thereunder for the treatment of both man and animals.

One of the applications we received at that time was for an organic arsenic compound, 3-nitro-4-hydroxyphenylarsonic acid, in tablet form recommended for continuous use in the drinking water of poultry for stimulating more rapid growth and for earlier laying in pullets. The experimental data accompanying the application in the fulfillment of section 505(b)(1) were satisfactory as to the safety of the product for poultry when used as directed on the label. However, we were concerned about the accumulation of arsenic in the edible tissues of birds to be marketed for human consumption and also about the arsenic content of the eggs from

*Delivered at Proprietary Association, 71st annual meeting.

pullets receiving the compound.

This problem was discussed with the Commissioner's Office of the Food and Drug Administration and the General Counsel's Office of the Federal Security Agency. It was decided that under authority of section 505(b)(1) of the Act, we could legally request additional data to show the safety of the birds and eggs for human consumption. The applicant unhesitantly complied with this request and submitted the additional experimental data. The analytical data showed no accumulation of arsenic in the eggs of pullets continuously receiving this medication from the time they were day-old chicks as compared with eggs from birds receiving no medication. The muscular tissues and particularly the livers of the treated birds did show an accumulation of arsenic. However, when the treatment was discontinued for five days or more before killing the test birds, the accumulated arsenic in both the livers and muscular tissues was reduced to an insignificant amount. Following a discussion of the labeling directions with representatives of the applicant, it was agreed to include in the directions a warning such as: "Discontinue use of this product for at least five days before marketing the birds for human consumption to allow for the elimination of arsenic from the edible tissues."

In cooperation with the Food and Drug Administration, poultry nutritionists of the Bureau of Animal Industry, U. S. Department of Agriculture, confirmed the findings of the applicant by using the drug in a complete feed base. These poultry nutritionists also found that certain other organic arsenic compounds, including arsanilic acid and sodium arsanilate, would produce the same growth-stimulating results when added in very small amounts to complete poultry feeds. Soon after publication of these results, poultry raisers began to make demands upon feed manufacturers to incorporate 50 grams, and not more than 90 grams, of organic arsenic compounds in ready-to-use poultry feeds. Since pharmacologists agree that organic arsenic compounds are poisonous or deleterious substances, there was no alternative to a decision that a feed to which an organic arsenic compound is added would be an adulterated food as defined by the Act if labeled primarily as a feed. We then had to ask ourselves if these arsenicals would fit the term "drug" when added to a feed base and represented for stimulating the rate of growth. In the light of the statutory definition of the term, it was not difficult to reach a decision that products of this nature would be drugs as defined. Because of the newness of their specified purpose, the Food and Drug Administration had to regard such feeds containing organic arsenic compounds as "new drugs" as legally defined in the Act. To comply with the labeling provisions of the Act for drugs the labels of such feeds have to bear a prominent quantitative declaration of the particular organic arsenic compound used, under the heading "Active Drug Ingredient" and also adequate directions for use of the product and appropriate warnings against misuse. The warning previously mentioned now appears upon all feeds containing organic arsenic compounds.

You are all familiar with reports concerning the growth-stimulating properties of certain antibiotics and antibiotic-fermentation residues when added in small amounts to complete feeds for growing chicks, turkey poults, pigs and young calves. When this question was first presented to the Food and Drug Administration, it was administratively decided that such antibiotic products are not poisonous or or deleterious substances. Therefore, no objection has been made to the addition of supposedly nutritional levels of certain antibiotic products to feeds for poultry, swine and young calves if properly listed in the declaration of feed ingredients.

Referring again to organic arsenic compounds in feed bases, poultry nutritionists of the Bureau of Animal Industry, U. S. Department of Agriculture, found that the organic arsenic compounds augmented the activity of certain antibiotics for growth stimulation of poultry. Practically all feed manufacturers now add organic arsenic compounds and antibiotic products to feeds for poultry and in some cases for swine. These feeds containing small amounts of certifiable antibiotics for growth promotion have been exempted from certification by regulation because it was decided that certification was not necessary to insure safety and efficacy of use. These same antibiotics are now being used in feeds in much higher levels for prophylactic and therapeutic purposes. A special regulation has just recently been approved to

(Continued on page 120)

Corrosion-Free Vacuum Filtration

by Walter Perkins,

CHIEF CERAMIST—
THE U. S. STONEWARE CO., AKRON, OHIO

and R. O. Weiss,

VICE PRESIDENT—
METALSALTS CORPORATION, HAWTHORNE, N. J.

Fig. 1. This shows four chemical stoneware vacuum filters in use at the Metalsalts Corporation in Hawthorne, New Jersey.

Filtration can be defined as the separation of solids from liquids. This is accomplished by passing the liquid through a porous medium, the solids being retained on the surface of the medium.

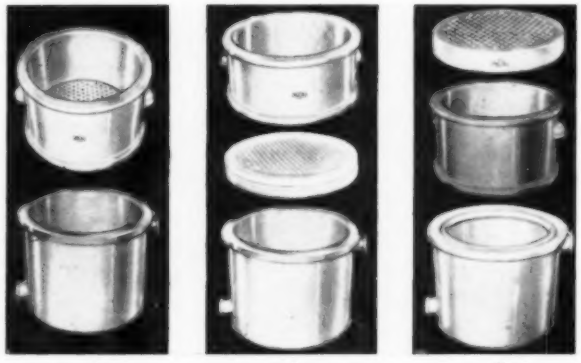
Ceramic filters accomplish this separation in an intermittent manner through gravity, usually aided by vacuum. In general, these filters consist of an upper chamber, a lower chamber and either an integral or detachable sieve plate. The accompanying figures illustrate several available styles. The use of the different style filters is primarily a matter of personal preference. Integral filter plates allow easier instllation of cloths but they are subject to some disadvantages. They have less resistance to thermal shock. Because of their integral construction the top part is heavier, which makes handling more difficult. If either the plate or the upper chamber is broken the whole top unit is lost; whereas in three piece construction breakage of one component does not cause the discarding of another.

A less known, but quite effective ceramic filter design, is one that is basically a simple cylinder.

The bottom of the cylinder is grooved in a tight spiral pattern. At each intersection of this spiral with one diameter line there is a hole which connects through the base into a collecting tube. The tube, of course, extends under the cylinder bottom and is as long as the diameter itself. Vacuum can be applied at the end of this tube.

Since there is no component receiver a surge pot must be used to collect the filtrate. A minor objection to this filter is that the collecting tube is less easy to clean and may require back flushing to dislodge obstinate solid matter. This filter is not subject to atmospheric stresses over large areas when under vacuum as it is accessible to the atmosphere at most all surfaces. It is lighter in weight than other filters of comparable capacity and its low height permits convenient charging. If desired, this Spira-Groove filter would lend itself handily to a tiering arrangement. (Figure 3, Page 130)

Filtration is accomplished by placing a suspension in the top of the filter and then forcing the liquid through the various passages and capillaries of the building cake at a rate which is determined by the characteristics of the solid material being separated.



A B C

FIG. 2.

Styles of filters

A. Two-piece vacuum filters of chemical porcelain. In this design the perforated support plate is integral with the upper chamber of the filter.

B. Three-piece vacuum filters of chemical porcelain. In this design the loose perforated support plate (or Filterstone Porous Plate) fits between the upper and lower chambers of the filter.

C. Three-piece vacuum filters of chemical porcelain. In this design the loose perforated support plate (or Filterstone Porous Plate) fits inside the upper chamber of the unit.

D. Three-piece Vacuum Filter with "Filterstone" Porous Plate. The unit is made of Chemical Stoneware.

D

Usually a faster rate can be obtained by increasing the pressure differential between the top and bottom chambers of the filter. However, if the solids are soft enough to deform, a greater pressure may squeeze them so that channels and pores which were open may be closed off, actually retarding the filtration rate. The flow rate of liquid through cakes which resist compression is directly proportional to the area and to the pressure and inversely related to the particle size of the suspensoids, the total amount of the cake and to the viscosity of the liquid.

A pressure increase will cause liquids to filter faster through granular or crystalline solids while colloidal types will benefit only slightly or may, as indicated previously, reach a critical pressure beyond which filtration will actually decrease. The vacuum filter which can be operated at about 10 p.s.i.a. has definite advantages when the cakes are compressible.

Experience with the material is the final criterion for the actual determination of optimum operating vacuum.

Some assistance can be obtained in the filtration of colloidal materials through the use of filter aids. These filter aids are commonly diatomaceous earth, carbon or activated clay. They are finely divided, porous, inert solids of low specific gravity, which remain in suspension and which tend to agglomerate the colloidal matter, keeping it from packing together and blinding the filter medium.

Filter aids may also be used to pre-coat the medium; again to keep the fine particles from blinding the cloth.

Pressure filters usually build up cakes of about one and one-half to two inches of thickness. Vacuum filters of the intermittent type permit cakes of any desired thickness ranging from about one-half to about six inches depending on the material being run.

In plate and frame presses, the filter cake builds from the bottom up and can, therefore, be of varying density. This can be an important consideration where a suspension consists of several materials having some range in specific gravity.

Cakes formed in vacuum filters build up evenly over the entire surface and they have uniform density. This condition makes for more uniform filtering and cake washing.

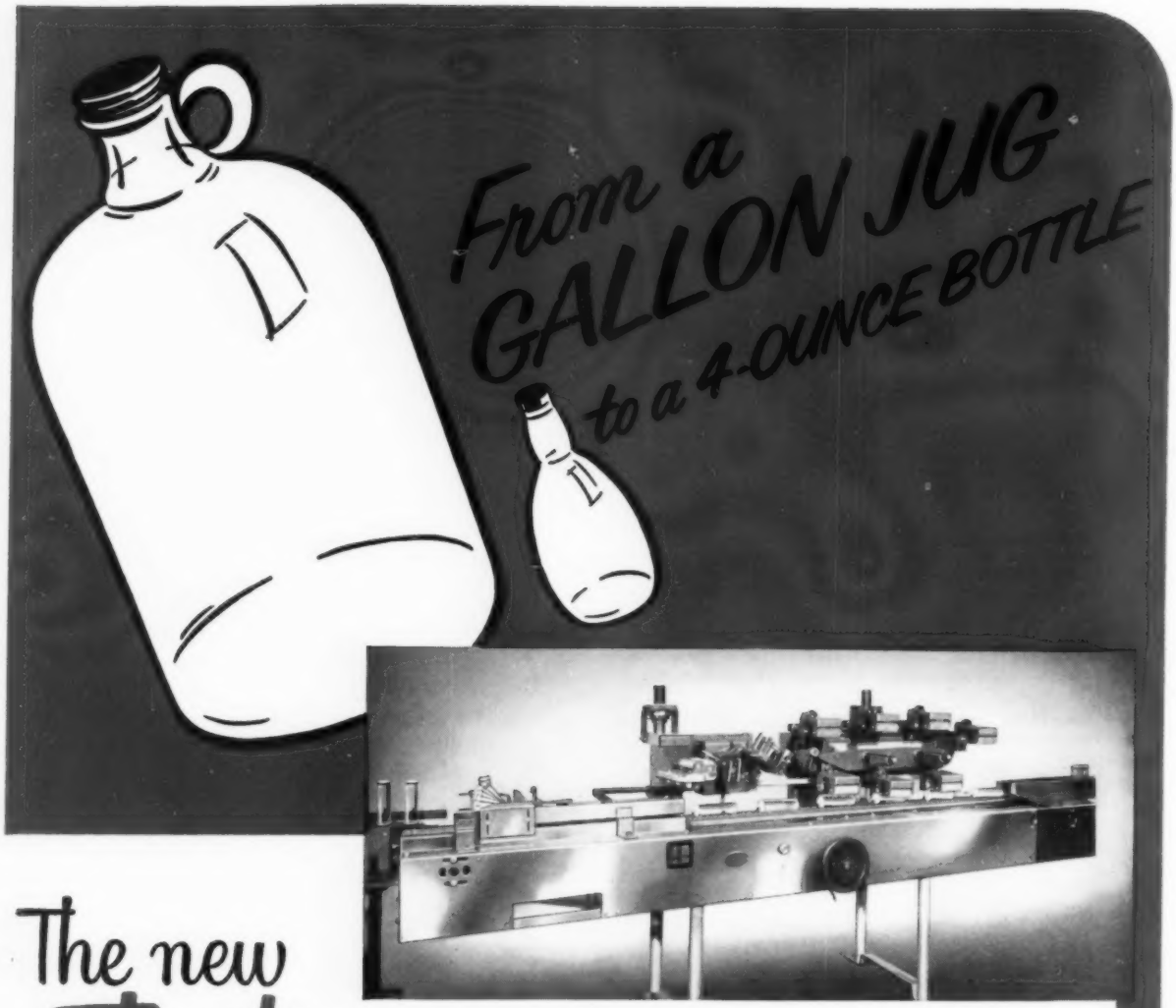
In order for a cake to form, there must be a medium that retains the solids. This medium is supported by the sieve plate in ceramic filters.

The usual practice is to procure cloths the exact size of the filter plate which is the inside diameter of the filter top. If there is an annular space between the plate and the filter top, the cloth should be bought oversize and lapped over into the space. Then packing, such as asbestos rope, is put in.

Some operators use an excessively large cloth placing it in the filter top to simulate a bag. This latter idea works well when washing is to be done outside of the filter. The cake can readily be lifted from the filter and dumped into the washer preparatory to a second filtering.

Whatever filter medium is used, it should be selected with an eye to the material being processed. A compromise must be reached between as open a weave as possible to minimize plugging and as tight a weave as possible to reduce loss of fine particles.

(Continued on page 129)



The new Thrifty LABELER handles them all!

If your line consists of various sizes, the new THRIFTY Labeler is the machine for you! It will label a gallon jug or a 4-ounce bottle with equal facility. Size change is made in a few minutes by simple adjustments.

Odd-shaped bottles or containers with recessed surfaces pose no problem. A unique *flexible pressure* device presses the labels down after they have been applied. A firm, strong seal is assured — even if the container is hot, cold, wet or dry. Thermoplastic or hot-melt adhesive may be used. Labels may be rectangular, round or fancy cut.

Low in initial cost, high in operating efficiency, the THRIFTY Labeler is the ideal machine for plants now labeling by hand as well as for those using machine-labeling.

Write for complete information

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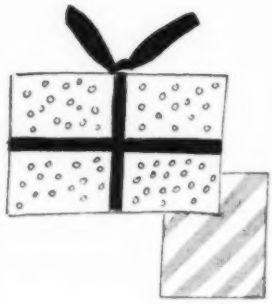

Packaging and Selling

Animated Package

According to Egmont Arens, a New York package and industrial designer, T V commercials and characters like Howdy Doody, Hopalong and others are bringing about rapid changes in grocery packaging.

"Television is entertainment full of change, action and excitement" said Mr. Arens. "For this reason, T V is exerting a strong influence on trade-marks and slogans. The gay, catchy, animated trade-mark, human or cartoon, is today top salesman on T V."

Mr. Arens said again, "The static grocery package that is all commercial with no entertainment is on the way out, so is the package that remains the same month after month and year after year."

An example of this new trend in thinking for packaging is the new Kellogg redesign. Kellogg is now using its packaging to give the public a show with cute lively animals on one series of packages, lively girls on another, children's drawings and copy on a third series. As an example of animated trade-marks, Mr. Arnes cited Borden's Elsie-the-Cow, Nedick's cute little Orange Man and the well-known Green Giant recently animated for advertising.

Nearly ten years ago, this magazine had a feature article on Packaging in which it illustrated a number of theoretical package designs. The design used here was a photograph or a drawing that would have an entertainment feature and also contain a strong selling story which would change at regular fixed periods. We stated then and we believe even more emphatically now, that except for certain fixed elements for continued recognition, there is no more reason why a package should remain static than that an advertisement in a magazine should be endlessly repeated. The idea of animation of the trade-mark and a constant change of theme on the package itself need not at all interfere with product and brand identification and it can prove a positive factor of interest, entertainment, sales appeal and product instruction at the point of sale.

Plastic Tube

A collapsible tube of vinyl plastic is said to be so strong that a 200 lb. man can stand on it without rupturing sides or seams. This tube is said to be about one-third as heavy as a lead tube and to cost about the same price. It is made by Wallace Container Company in Los Angeles.

Retailer Prods Manufacturer

Hess Brothers of Allentown, Pa., the dynamic and versatile department store, is again having its annual contest for a product designed by manufacturers of consumer merchandise notable for a utilitarian and multiple use.

Max Hess, Jr., President of Hess Brothers, an originator of this very successful contest, believes that manufacturers can be encouraged to produce merchandise which not only improves our standard of living but at the same time gives the consumer the best value for his money. "There is no question in my mind," said Mr. Hess, "that a consumer is getting top value for his money when he can purchase a single product that serves a multitude of purposes."

Sixty categories are open for manufacturers of those products, including toiletries.

We like this idea of a contest by a retailer to encourage manufacturers to spend more time, thought and money on products which will give an added plus in service or value to the consumer. It can be said that competition has already taken care of this but the facts are that many branches of the consumer goods industries are very far from acquiring any distinguished record of research either in the laboratory or in consumer marketing.

We like too, the idea of versatility but we hope that Mr. Hess will not forget that many products which have earned a basic and a preferential place in the market are ones which are doing just one functional job in a superlative way.

Gair Today

"Gair Today" is the name of an interesting and well-printed booklet which gives the story of folding cartons and shipping containers. As these two essential needs for industry have grown and expanded with the development of this long-established and leading company in its field, anyone who is interested in the folding

carton or shipping container industry ought to have a copy of this booklet. It is a good job of printing and illustrating, and it is packed with a lot of good, sound fundamental information about these two products as well as a temperate story of Robert Gair Company. The booklet is available for general distribution at the general office, 155 East 44th Street.

Harper's Beauty Box Promotion

The July issue of *Harper's Bazaar* is featuring a complete story on the Harper's Bazaar Beauty Box promotion which is to be patterned along the same lines as their Perfume Packet of a few years ago and their Beauty Packet of last year.

Fifty thousand samples of beauty products have been furnished by each of ten top-notch manufacturers, and each set of ten products will be packaged in a pale-blue case, to be offered at one dollar, including tax. The Beauty Boxes were assembled by the Guest-Pac Company of New York.

Included in the beauty sampler are Lanvin's Arpege talc, Shulton's Desert Flower Hand and Body Lotion, a 10-day box of Calometric Weight Control Packets, Dusharme's Hair-Sheen Wave-Creme, Dermetics' S. A. Complexion Cleanser, Coty's Muted Bronze

Air-Spun Powder, Dorothy Gray's Super-Stay Indelible Lipstick, Revlon's Moon-Drops Moisture Balm, Tussy's Cream Deodorant, and Lentheric's Dark Brilliance.

The promotion has been limited to 50,000 because a larger number would run into a prohibitive cost for every one concerned, according to *Harper's*.

Grocers Do Not Hurt Druggists, According to a Nielson Official

Reasons for this conclusion are the same generally accepted reasons which now account for our general prosperity. These reasons are the high rate of productivity, the increase in population and the increase in disposable consumer income.

Maybe these are good and sufficient reasons for the druggist to forget that bogeyman, the grocer. Maybe also these conditions of increasing population and prosperity will always be with us so that the druggist can permanently put on the shelf any future fear of the grocer.

Nevertheless, the conclusion of this market research expert leaves us rather cold and according to the ways in which retail druggists' groups are reacting in promotion plans and other countermoves, we would guess that this opinion will also leave the retail druggist somewhat cold.

We do admit one thing. Twenty-five years ago, when Woolworth and the other variety stores first put in a toilet goods department with the new ten-cent size toiletries packages, there were wails and the gnashing of teeth, the scolding of manufacturers, and various countermeasures by retail druggists, who were certain that this would cut the ground from beneath their feet in their toilet goods department. It is true that none of their worst fears materialized and that in succeeding years the several thousand new stores, that is variety stores, controlling numerous traffic, did succeed in expanding sales for the industry and certainly did not injure drugstore sales.

However, it seems to us an inescapable fact that in any one year, we can sell just so much tooth paste, hand cream, candy, etc., and that the entry of fifteen or twenty thousand new distributors is bound to make a dilution in distribution which will affect druggists somehow.

Let's Not Miss This Boat

We do not hear anything about it but there must be one sweet boom operating on sweetening agents to replace sugar. Saccharine, the standby of the diet-weary individual who carries his little bottle of saccharine tablets is getting very strenuous competition, particularly in food packing, from sucaryl, that is, Abbott's Sodium Cyclamate and Calcium Cyclamate.

The food industry, according to reports, has been taking up Calcium Cyclamate in a big way because it is said to avoid the metallic taste associated with saccharine. In some brands and in some cities, sugar-free soft drinks have been outselling the sugar-base drinks.

At present a hurdle in this rapidly-expanding field is that twenty-six states do not permit the sale of drinks using synthetic sweeteners in any retail store except the drugstore. However, so potent and widespread is the dieting demand in the United States today that we will probably soon be faced with a political issue in limiting the sale of soft drinks using the chemical sweeteners to a situation very much similar to that which took place with margarine and butter.

The sugar people are putting up a tough fight for sugar as a food and are organizing very much as the dairy industry organized for butter. A pamphlet is now being distributed entitled, "Why Sugar in Soft Drinks" written by a professor of Food Chemistry at Massachusetts Institute of Technology and presented in a scholarly, scientific way.

All through this pamphlet the statements supporting sugar have the same authentic ring as dairy interests, statements concerning butter.

We have suggested for a long time that the entire drug industry, that is the pharmaceutical manufacturers, in their opportunities for directing research and in their sales opportunities, and also the retail pharmacists

GAIR FOIL CARTONS

create a style trend in smart Packaging!

Think of your product as a jewel, give it an appropriate setting by Gair, to catch the eye and captivate Consumers in this Age of Self-Service... perhaps a glistening transparency of rigid plastic, lined with luxurious foil like the Martex carton shown above. Or some other imaginative creation now made possible by the skill and facilities of the Gair organization.

Challenge us to show you a package that will walk your product right off the dealers' shelves.

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DRESSING UP makes the difference!

Elegance with stock-mold economy. Duraglas stock-mold bottle A-7179 with a distinctive Empress molded closure makes a handsome salespackage. Sizes ½ and 5 ounces.

Clean-cut lines... smart label designs... distinctive closures give your product an elegant salespackage with a flair for action

May we submit our ideas for a Duraglas salespackage for your products?

Duraglas packages are protectors of quality

GRADE MARK REG. U.S. PAT. OFF.

OWENS-ILLINOIS GLASS COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES

are in this dieting tidal wave sweeping over America in a very much bigger way than they consciously realize. It is about time that the pharmaceutical industry had an accounting of their present position and their potential opportunities in this enormous market in which they are already rightfully and intimately involved.

We Need this Census

There seems to be a chance that the census for business, that is the manufacturers' census, will go out the window with a husky shove from this new Congress. At least that seems to be the conclusion from a reading of the hearings of the House Appropriations Committee. As one congressman said, "The thing which bothers me about these censuses is: What earthly use are they after you get them done?"

We think the manufacturers' census has proved of very substantial value to many industries which otherwise would have no dependable statistics about any part of their industries. It may be that certain industries, such as oil and steel, spend a great deal of money to secure current, authentic statistical information and that very often this information is much more timely and more complete than anything turned up by the census. It looks as if the smaller industries are the ones that really need this manufacturers' census and it also looks as if there should be some protest to Congress if this Committee seriously proposes dropping this part of the census.

Inventions Keep Coming

Just to show that invention and progress is not limited but is a universal pattern of American life, we would like to cite the new easy chair that provides the fortunate owner with a heat treatment while he is taking his ease.

This fascinating invention has an electric unit and three sets of heating coils hidden under the upholstery. All anyone has to do is to manipulate a small lever on the side of the chair to get heat in three different places, that is, under the shoulders, under his thighs and all around the fanny.

What a pity this inventor did not keep going just one step more and add a push-button Martini dispenser.

This Hit Home

It isn't very often that the publishers of a trade magazine are confronted by a stream of letters from subscribers quoting an advertisement in their magazine and asking the editor why he doesn't write editorials of that kind.

This is what happened recently with an advertisement of Charles of the Ritz in the April issue of BEAUTY FASHION. This advertisement showed a silhouette of a tree with a headline, "we've removed the 'suckers.' " Said this advertisement, "The health and yield of a fruit tree are at the mercy of "suckers" ... offshoots which parasitically sap strength from the limbs and reduce its yield. And in the merchandising of cosmetics there is this analogy. The yield realized by a store is dependent upon how fast the items in each line move and how many times the total stock "turns off". Slow-moving items reduce a store's net profits. Charles of the Ritz has removed its "suckers." Year by year it has pruned its line . . . strengthened it . . . so that today Charles of the Ritz sales at the peak-point in its history has been accomplished with the shortest line it has ever offered . . . distributed through fewer outlets. This policy of concentration, together with the policy of selective distribution, has made Charles of the Ritz a dependable resource for America's finest department and specialty stores."

Mass Makeup

Mass makeup or production-line makeup is with us at last. The awful thought occurs to us that the grocery supermarket will certainly hear of this new method and one of these genius operators who has nothing but casual contempt for his food department will be certain to try to find some way of employing it.

Mass makeup is being used by Warner Brothers makeup department to turn pale-faces into Indians for a new picture. Instead of applying the regular makeup by patting it on with a wet sponge, Warner Brothers just lines up 200 or 300 prospective heap-big Indians and goes down the line with a spraygun, transferring them in no time at all into noble Redmen.

No One Motivation

The Tea Council is one of the many industry groups market researching in an effort to find out why people like their product and what is the best reason to play up to make them use more of it.

This kind of market research is producing some very nifty words in the best tradition of military strategy. For instance, to discover information of this sort, you go into "motivational research" and then to be sure that you are on the right track, you conduct "depth interviews."

These depth interviews of the Tea Council are a contribution to the accumulating evidence that two of the most widespread motivations among the public today are health and dieting. Those people interviewed about tea said that two reasons they like it are that (a) it contains no calories and (b) doctors suggest plenty of liquids.

Fading Committees

Perhaps the epidemic of committee management which has so badly infected so many of the larger companies in our trade has reached its final peak and will begin to decline a lot more rapidly than it was generated. At least one big company in America, that is General Electric, under a new president, Ralph Gardiner, is not letting any executives slip out of responsibility by way of the Committee. The principle of placing responsibility on department managers and division heads of General Electric is part of a basic program of decentralized authority. Committee management, often futile, always time-wasting, always there for a good alibi and frustrating to the capable executive, has been one of the extravagances of the last ten years. Now perhaps some of these companies in our trade can really start their executives working again and incidentally make it possible for a business visitor to see them when

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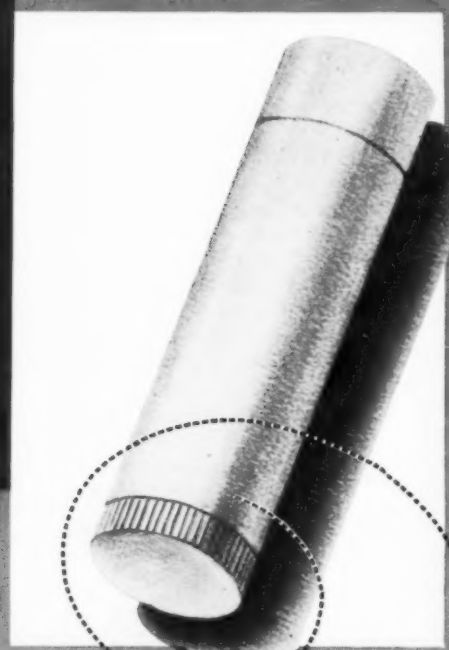

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- **No molding required, product can be poured directly into container.**
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*PAT. PEND.

their secretary would not be able to say in toneless repetition, "He's in a committee meeting."

Who Gets the Research?

Anyone who has attended the Toilet Goods Convention this year and been present, first at the meetings of the Scientific Section of this convention, and then following that, at the meeting of the Society of Cosmetic Chemists, must have been very deeply impressed by the way this industry has in a relatively few years become research and chemistry minded. The size of these organizations, that is, the number of men who attended these meetings and the large number of companies represented by technical men, makes it very clear that a new era is under way in the cosmetic business.

Only a few years ago, certainly not over twenty, hardly any companies in this industry saw any need for research or, in fact, for any services which could be performed by a chemist.

During all those years, and up until a few years ago, practically every forward step that was made by the industry in new products or product development, in packaging or in production efficiency, developed through the research of various suppliers doing business with the cosmetic industry.

When these suppliers developed something new that showed great possibilities for cosmetic sale, they went to their biggest or favored customer. They gave this customer a chance to introduce a new, profitable product, and of course to build up a large volume for the supplier.

This was the normal and natural thing to do when hardly any company employed a chemist and when it was normal for the cosmetic company to openly and frankly depend upon his suppliers for anything new in this business.

During the last several years, suppliers have been running into certain difficulties. A great many of their larger and better customers now have chemists and laboratories. Sometimes these chemists are jealous of their own position in the company and in a few instances, they have been known to operate a sleight of hand which deprived the supplier of his new idea and any credit for it. There have been even cases where some of the bigger companies have bluntly told suppliers with ideas that if anything new were offered to them, they would send it to their laboratory with instructions to match it if possible.

This means that suppliers with new ideas which cannot be patented and protected are having increasing difficulties in marketing their ideas.

Since it is undoubtedly true that the supply industry, covering all phases of chemicals and raw materials and all kinds of packaging materials and all kinds of factory equipment will continue to come up with many valuable ideas worth a great deal of money to the customers who are given the initial opportunity to use it that there should be some basis of arriving at an ethical company policy which will make it perfectly clear to every salesman calling on them that he will never be deprived of the fruits of his labor or inventiveness by a company effort to imitate or circumvent him in any of its departments.

Such a policy could pay extravagant dividends in the future.

Is This the Way?

This is a story of a wholesale druggist who is stepping up what he calls a counteroffensive against the supermarket. The plan evolved by Hummiston-Keeling & Company is supposed to build traffic in independent drugstores. The plan is a premium plan, but according to statements it differs from the conventional premium device which the food chains use in that the customer of the drugstore need not make a purchase to take part in the plan.

A housewife is supposed to get a calendar club card and every time she steps into a drugstore, she can have this card punched. When she has accumulated 18 punches in a calendar month, then she can purchase from an assortment of premiums at quite a considerable discount.

We think this is a very elevated thought for a drugstore and it will undoubtedly bring a number of neighborhood women into the store to get the cards punched. Maybe it will establish quite a little race, as it appears intended to do, between the grocery store and the drugstore.

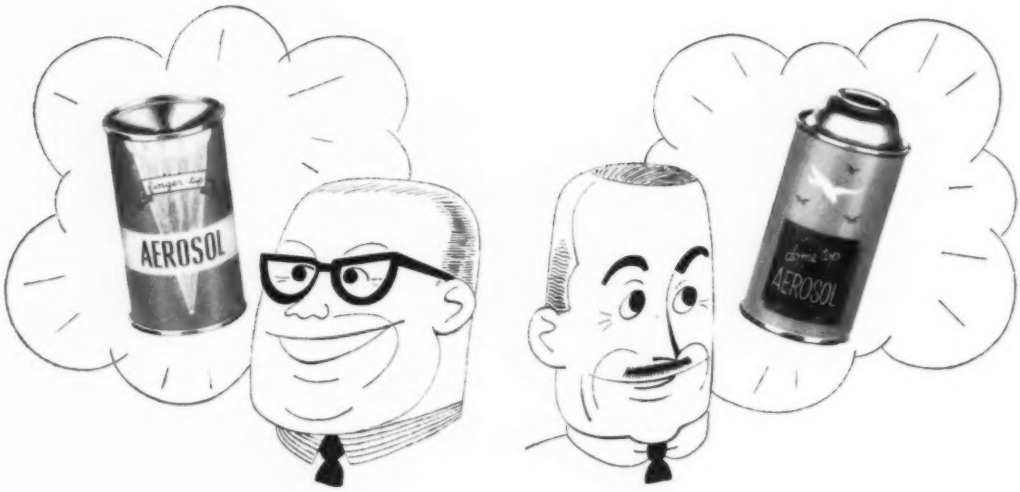
This is what we referred to in our last issue as the druggist playing on the supermarket's own home field and completely losing sight of the professional advantage which he now has in his community. This is the kind of operation the grocery store operators excel in and they did not have to spend four years in college to learn how to do it.

New Step in Retailing

The leading department store, L. Bamberger & Company of Newark, New Jersey, is starting an experiment that may have a very substantial influence on retail merchandising. According to an announcement by this store a two months' test has been completed using cellophane for pre-wrapping packages of merchandise in twelve different departments. In this test the development of a standardized bag width in seven sizes and the use of automatic bag-making machines have reduced the cost of this experiment to a very moderate point, requiring no additional employees. As a matter of fact, according to a store executive, the operation is more than paying for itself in increased sales.

Aside from the increase in sales, which can only be appraised and judged properly over quite a long substantial period, where the novelty of cellophane wrapping with such things as linen, sporting goods and cosmetics, no longer plays a part, the key to the interesting part of this experiment seems to us the reduction of mark-downs due to soilage.

Damage and soilage from constant and rough handling is a substantial cost factor to many retailers. With some types of merchandising, such as textiles, this handling is unquestionably essential to a sale for many customers. But with a great many other products, where the sense of touch does not add anything in establishing the value or quality of the goods and where eye-appeal is the chief determining sales factor, this cellophane-wrapping may well revolutionize operations. It does at least give the customer a chance to pick the product up, to look at it more closely and in fact, to do everything necessary to determine the purchase while still avoiding soilage.



What's your idea of the ideal AEROSOL can?

Some aerosol-using manufacturers prefer a dome-type can with a 1-inch curled opening. Others say a concave top can — perforated to take most popular valves—fits their needs best. Continental, as you may know, makes both styles.

However, that's not as important as the way we make them. To insure fast, uninterrupted filling we don't let dimensions vary as much as a hairline. Every standard aerosol is exactly 2-11/16 in. wide and 4-13/16 in. high. Every midget aerosol (holding 6 oz. of most sprayable products) is 2-2/16 in. wide and 3-13/16 in. high. Our lithography makes the millionth can in a press run as beautiful as the first. For the best in product and conscientious tailor-made service, call on Continental every time.

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Doings

The S. E. Massengill Co. has prepared Aminodrox Tablets, containing aminophylline and aluminum hydroxide Gel, which provide a dependable method of oral administration of the aminophylline in large enough doses to produce the same high blood levels obtainable with parenteral administration. Besides its use as a diuretic, it is now feasible to use oral aminophylline therapy in the treatment of congestive heart failure, bronchial and cardiac asthma, status asthmaticus, paroxysmal dyspnea and angina pectoris.

The Hilton-Davis Company, Cincinnati, a division of Sterling Drug, Inc. has introduced a new antiseptic agent with a highly-effective deodorizing quality that is also capable of ridding 98 per cent of skin bacteria. The product is known as Lorothidol, the Hilton-Davis trade-mark for 2,2′-thiobis (4,6-dichlorophenol), and was developed by the Sterling-Winthrop Research Institute after three years of tests with chlorinated phenols. It is expected to find use in almost 300 different industrial products, particularly in the fields of personal deodorant and medical soaps, creams, lotions, colognes, antiseptic foot powders, baby powders, shaving creams, and shampoos, according to Nelson S. Knaggs, Hilton-Davis vice-president in charge of sales.

Incorporation of Lorothidol in many such products, especially soaps, is indicated on the basis of its tested properties as a top-grade skin bacteriostat, says Mr. Knagg. These characteristics are: germ-killing effectiveness; good adherence to the skin, so that the compound does not wash off; negligible toxicity; no odor so that it combines easily with perfumes and needs no masking and there are no sensitizing effects on the skin.

Ease in combining Lorothidol with detergent, cosmetic, or pharmaceutical products is cited as another advantage. Being virtually insoluble in water, usually a slurry of the antiseptic is prepared and put into a soap bar, for example. To add it to liquid soaps, it may be dissolved in alcohol, or a similar solvent, and metered in.

Routine use of the compound has resulted in reducing by 98 per cent the bacteria normally present on the human skin. This factor is expected to be important to drug manufacturers as a means of reducing such secondary skin infections as acne and boils, and in minimizing the danger of post-operative infection.

Pfizer is offering Terramycin pediatric drops, designed to combine the maximum acceptability of Terramycin oral suspension with high potency required for dosage of young children. Packaged as a dry powder stable for two years, Terramycin pediatric drops are compounded by addition of water to the 10-cc. bottle.

Lobica - Debruille, 1841 Broadway, New York, has produced Scopodex, a safe, effective and quick-acting remedy for all forms of motion sickness. It is virtually non-toxic, says the company, and does not cause drowsiness.

George A. Breon & Co. has introduced Nabadial, which contains the steroid hormone, methylandrostenediol, in a buffered aqueous suspension containing 50 mg. per cc. in 10 cc. multidose vials. It has a mild androgenic effect and will produce practically no secondary male characteristics in women.

It is indicated for the symptomatic relief of certain forms of breast cancer, menopause, dysmenorrhea, and other menstrual dysfunctions.

U. S. Vitamin Corp. has introduced a new multi-vitamin formula which can be successfully administered intravenously to help speed postoperative recovery. Known as Multivitamin Infusion Vi-Syneral brand, it will be made available on the completion of a number of clinical studies which showed it to shorten healing time, to hasten the return of the appetite following surgery, and restore the patient to health in a shorter time.

The Wm. S Merrell Co. has announced a new Bentyl dosage, Bentyl Injection, which is recommended for pylorospasm, spastic constipation, irritable colon, and other conditions.

Shulton has redesigned its Desert Flower Body Sachet in a new-style glass bottle with gold leaf decor to match the new carton. The company has also designed an unusual point-of-sale display piece to promote its Desert Flower Purse Perfume. An easel display with green, gold and white decor carries out the modern Desert Flower motif with six hand-carved Desert Flower Purse Perfume bottles and their non-breakable applicators. Five bottles are encased in new white-and-gold cartons; the sixth bottle is exposed for quick identification.

Winthrop-Stearns has changed its formula of Pluraxin capsules, an oral multi-vitamin preparation, in order to conform with the standard therapeutic formula recommended by the Food and Nutrition Board of the National Research Council. The preparation now contains about five times the adult maintenance allowance of the various vitamins.

An H&D idea for you

NEW WONDER TOOTH PASTE
Ipana AMMONIATED CHLOROPHYLL
37¢ LARGE SIZE 59¢ GIANT SIZE
TO REDUCE TOOTH DECAY!
AMMONIATED PLUS CHLOROPHYLL TO STOP MOUTH ODOR!
BUY GIANT SIZE AND SAVE!
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Doin's ... (CONTINUED)

Lilly has developed Pulvules No. 342, Co - Pyronil (Pyrrobutamine Compound, Lilly), Pediatric, for the relief of hay fever and other forms of allergic rhinitis, urticaria, and other conditions. This pediatric form of the long-acting Lilly antihistamine comes in small, red pulvules which contain half the medicaments in the adult-size pulvules.

Schering Corp. has announced the availability of Prantal Methylsulfate Tablets with Phenobarbital, an anticholinergic agent with sedation. It is indicated in peptic ulcer and other conditions where it is desirable to reduce gastric acidity and motility of the stomach. The concomitant use of phenobarbital provides mild sedation, reduces apprehension, and relaxes tension.

Pfizer is now marketing Magnamycin in 250-mg. sugar-coated tablets. It will be packaged in vials of 16 at first, but a 100 size in an amber round bottle is planned in the near future. It is also marketed in tablets with a potency of 100 mg.

Pitman-Moore Co. is now distributing Veralba Tablets for the symptomatic treatment of essential hypertension, acute or chronic renal hypertension, malignant hypertension, and hypertension associated with toxemia of pregnancy. It is supplied in the form of 0.2 mg. and 0.5 mg. tablets in bottles of 100.

Schenley Laboratories has introduced Sombulex, a safe, effective hypnotic that is ultra short in its duration of action. Each tablet contains 0.26 grams of N-methyl cyclohexenyl methyl barbituric acid. One or two tablets taken at bedtime, preferably with a warm beverage, induce sleep within 20 minutes.

Pinaud is offering its Lilac Vegetal After-Shave Lotion in a special deal from July 15 through September 15. The deal offers the regular $1 six-ounce size for 79 cents retail.

A similar arrangement is being offered during the same period on Pinaud Eau de Quinine Triple Action Hair Tonic.

Dermetics has a new Lipstick Counter-Unit which recently appeared on better cosmetics counters everywhere. It is designed to give the best display value to Dermetics' attractive fluted-brass lipstick case. The red-on-white platform holds securely an assorted dozen of Dermetics best - selling shades, Red Earth, Atomic, Brilliant and Prairie Fire.

Parke, Davis & Co. has prepared Ambodryl hydrochloride, a new antihistaminic agent which has a minimum of side reactions. It is used to treat a wide variety of allergies, including hay fever, allergic rhinitis, asthma, urticaria, eczema and migraine.

Acme Cotton Products Co. has redesigned its line of first-aid essentials. A uniform color scheme of red, white and gray distinguishes Acme adhesive tape, gauze bandages, Zip-Strip adhesive bandages and the new plastic Zip-Strips. Lettering and general arrangement of elements is the same in all packages, carefully aimed at high visibility and a clean uncluttered look.

Schering has also prepared Chlor-Trimeton 8 mg. Repeat Action Tablets with Sodium Pentobarbital 50 mg. They are indicated for symptomatic relief from allergic states, such as hay fever, vasomotor rhinitis, urticaria, allergic eczema, angioedema, serum sickness and drug sensitivity.

Westwood Pharmaceuticals, Buffalo, has prepared Pro-Derma Cream, a non-greasy, non-sticky cream containing 52.5 per cent silicone in an inert base. It resists water- and soil-soluble irritants for hours and does not interfere with the hands in household or industrial work.

W. Braun Co. has introduced a new line of polyethylene bottles under the Braun trade-mark and has formed a subsidiary, Plasticrafters, Inc., to handle the manufacturing and marketing details. Special attention will be given to private mold designing, as well as to applied labeling and decoration through another Braun affiliate, Glasscrafters, Inc.

Harriet Hubbard Ayer is distributing Ayer Tan Scented Sun Lotion which contains emollients to protect the skin against dryness.

Winthrop-Stearns is now supplying its NTZ Solution in 16-ounce bottles for the convenience of druggists in dispensing prescriptions. The solution contains Neo-Synephrine hydrochloride, Thenfadil hydrochloride and Zephiran hydrochloride and is indicated in colds, hay fever, sinusitis and similar conditions.

White Laboratories has a new line of therapeutically rational, purposefully simple dermatologic preparations under the trade name of Appliderm. They include Appliderm No. 1, Antipruritic Lotion; Appliderm No. 2, Antipruritic Ointment; Appliderm No. 3, Emollient Ointment; Appliderm No. 4, Resorcinol-Sulfur Ointment; Appliderm No. 5, Sulfur-Salicylic Ointment; Appliderm No. 6, Tar Ointment; and Appliderm No. 7, Undecylenic Acid Ointment.

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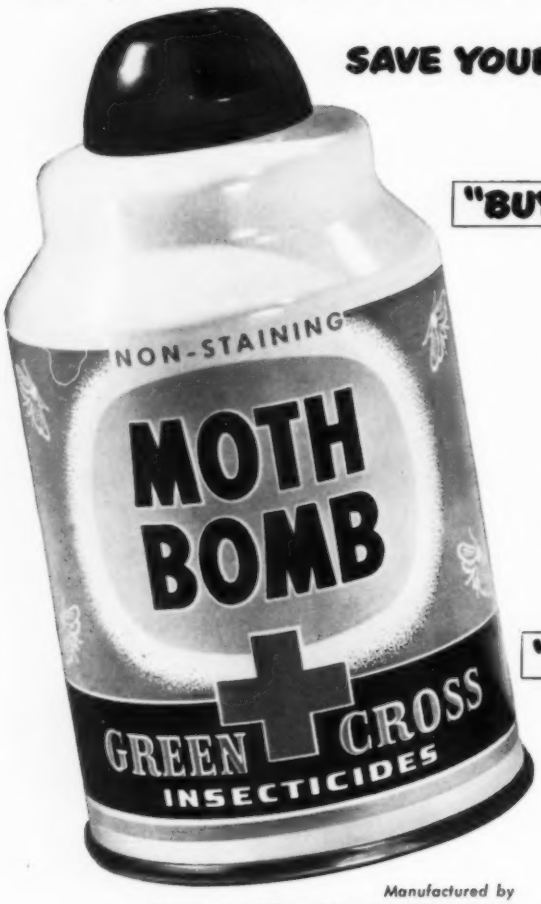
SAVE YOUR CLOTHES FROM MOTHS



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Once you spray clothes with non-staining Green Cross MOTH BOMB, you protect them all season (or until cleaned)! Spraying is quick, easy and thorough, because this popular moth-control product is pressure packed to s-p-r-a-y automatically from 11 oz. and companion 6 oz. sizes of Crown SPRA-TAINER.

"Modern Design" and "No Top Seam, No Side Seam" construction have kept SPRA-TAINER in the lead since it first started to make packaging history as the world's original propulsion can. The success of SPRA-TAINER is but one chapter in Crown's continuing story of Creative Packaging, which covers a vast variety of other fine cans for almost every use.

Other members of the Green Cross family of pressure products, packed in Crown SPRA-TAINER

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Division of
CROWN CORK & SEAL COMPANY

PHILADELPHIA, CHICAGO, ORLANDO NEW YORK, BALTIMORE, ST. LOUIS, BOSTON

#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap; oil-resistant Amekine synthetic rubber bulb (without strong odor); blunt glass.

New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

New Perfection

DROPPING PARTS

Simplify Your Packaging Problem

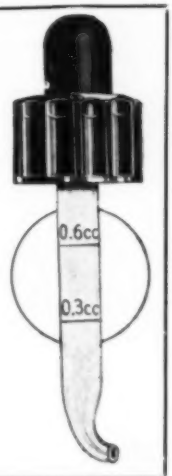
The wide variety of sizes, styles and colors in New Perfection's complete line of dropping parts offers the answer to your packaging problem. Each component part is designed to present and administer your product in the most attractive, convenient manner. We supply dropping parts to fit your bottles or furnish the complete unit.

DROPPER GLASSES CAN BE CALIBRATED IN COLOR

An inexpensive extra that adds great convenience to the use of your preparation. The dosage you desire in the color you specify is accurately and permanently printed on the dropper glass. Trade-marks and firm names can also be imprinted.

#2

Non-rolling, extra-depth Bakelite cap; thick-flange rubber bulb; special bent glass, plain or CALIBRATED.



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CAPS of plastic or metal can be furnished in a complete range of sizes and colors.

DROPPER GLASSES are available in a wide variety of styles and sizes; plain or CALIBRATED in any color to mark specific dosages.

BOTTLES in an attractive modernistic style in Amber, Blue, Green or Clear glass are available, with dropping parts, in the following sizes: 2 cc, ⅛, ¼, ½, 1 and 2 oz.

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Specify EXCHANGE Oil of Orange for complete satisfaction. This superior orange oil has been known for more than a quarter-century for quality and uniformity.

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News...

Keller in Norwich Post

Dr. Jacob L. Keller, until recently, section chief in the Chemicals Branch, Office of Price Stabilization, Washington, D. C., has been appointed to the newly-created position of director of chemical market development of the Norwich Pharmacal Co., according to Melvin C. Eaton, president. Prior to his Government position, he had been associated with General Aniline and Film Corp. for 11 years.

In his new post, Dr. Keller will be responsible for investigating possible markets for chemicals developed under Norwich's research program, other than those compounds found to be particularly effective in the field of medicine.

DR. JACOB L. KELLER

Frome Retires from Atlas

W. G. Frome has retired as vice-president, member of the board of directors and of the executive committee of Atlas Powder Co. He joined the company in 1913 and was assigned to its plant at Webb City, Mo., as assistant manager, becoming manager of that plant in 1917. Following additional promotions and transfers, Mr. Frome went to the Wilmington general office as assistant general manager of the company's explosives department in 1942 and in 1945 was appointed general manager of the department; directing all sales, manufacturing and research activities of the company in the explosive field. He was elected to the board of directors in 1946 and was made a vice-president in 1947. He has served on the executive committee since 1949.

D. J. C. Copps, who succeeded Mr. Frome as general manager of the explosives department on February 1, was elected to the board and to the executive committee.

Lum Appointed by Monsanto

James H. Lum, formerly development manager of the phosphate division, has been appointed director of development for Monsanto Chemical Company's organic chemicals division, according to John L. Gillis, vice-president and division general manager. He succeeds Alfred T. Loeffler, who has joined Food Machinery & Chemicals Corp. in an executive capacity.

Appointed by Squibb Institute

Dr. Geoffrey Rake, formerly medical director, has been appointed coordinator of scientific affairs in the Squibb Institute for Medical Research, according to Dr. W. A. Feirer, executive vice-president and director. Dr. Arthur D. Console, associate medical director, has been named director of the division of clinical research.

DR. GEOFFREY RAKE

Attends Credit Congress

Clare I. Gincel, credit manager of Givaudan-Delawanna, Inc. recently returned from Montreal, Canada, where she attended the 57th Annual Credit Congress of the National Association of Credit Men. This year's convention was held jointly with the Canadian Credit Men's Trust Association Ltd. and was very widely attended, with delegates from all parts of the United States, Canada and Hawaii.

Mathieson-Squibb Institute

Mathieson Chemical Corp. has established the Mathieson-Squibb Institute of Chemical Research and Engineering, according to Thomas S. Nichols, president. This organization will consolidate Mathieson's rapidly expanding chemical research and engineering functions. Dr. Carl F. Prutton, vice-president of Mathieson, will be president of the Institute.

Mead Retires from Pfizer

Francis L. Mead, who was responsible for many improvements in the current processes used for production of citric acid by Chas. Pfizer & Co., has retired. He joined the company in 1920 during the period when the firm was pioneering in the production of citric acid by the fermentation process. During his long career with Pfizer, Mr. Mead served as manager of citric acid recovery, and more recently, as new-product manager. He took an active part in the construction of Pfizer's citric acid plant at Groton, Conn.

Lilly Appointments

John O. MacFarlane has been appointed head of biological development, Eli Lilly & Co., and Roland Hodgson has assumed new duties as manager of the biological processing and filling departments.

DR. ARTHUR D. CONSOLE

Hon. Degree for Volwiler

Dr. Ernest H. Volwiler, president and general manager of Abbott Laboratories, received an honorary degree on June 1 from Coe College, Cedar Rapids, Iowa. H. H. Brooks, president of Coe College, stated that the degree was conferred on Mr. Volwiler "because of his outstanding record as a successful teacher and research chemist, because of his active interest in establishing the professional status of chemists and because of his humane leadership in the field of social relations and social welfare."

Promoted by Winth.-Stearns

E. F. Kittredge has been promoted to the position of manager of the professional service office in Boston, of Winthrop-Stearns Inc., according to Charles B. McDermott, vice-president and director of sales. He had formerly been a special hospital representative for Winthrop in the New York area.

RICHFORD SPILLPROOF PERFUME FLACONS

THE PURSE SIZE FLACON THAT CHANGED THE PERFUME MERCHANDISING OF A NATION!

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M E M O

SALES TIPS TO REMEMBER FOR BOOSTING YOUR PERFUME SALES

1. The lower unit price of expensive perfumes packaged in Spillproof purse size flacons enables your woman customer to try many different fragrances at relatively small expense. She *actually pays* to sample fragrances . . . once sold she (or the men in her life) will buy larger sizes.
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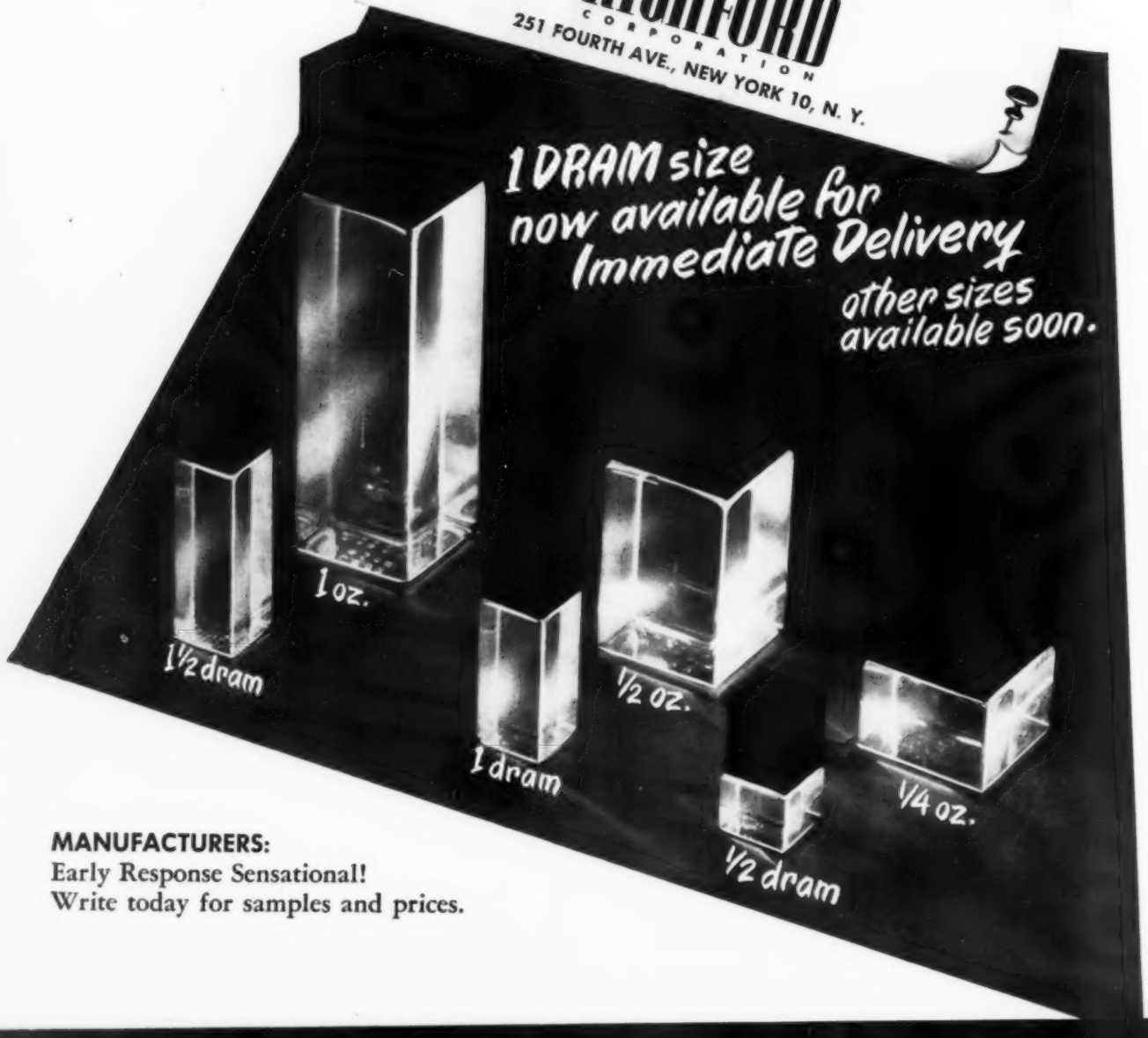

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Write today for samples and prices.

HAROLD J. BOGGAN

Boggan Promoted by Elmo

Harold J. Boggan, who has represented Elmo Inc. for many years in the Southwest, has been moved up to direct national sales.

Dr. Sharp Receives Award

Dr. Elwood A. Sharp, director of clinical investigation for Parke, Davis Co., received an award for "distinguished service in medicine" last month at the University of Kansas. The award was made by the Alumni Association which presents them in lieu of honorary degrees. Dr. Sharp developed Ventriculin for the specific treatment of pernicious anemia. He has played an important role in the development of other medicines, including the hormones, Antuitrin and Theelin. He and his staff conducted field trials for scores of new drugs, including Dilantin and Chloromycetin, before they were made available to physicians for prescription.

Harcord Moves to New Site

Harcord Manufacturing Co. has moved its entire operations to a recently purchased building at 125 Monitor St., Jersey City, in order to increase the production facilities, according to Maxwell B. Gold, president. The company specializes in paper canisters for the drug, cosmetic, cleanser, food, and allied fields.

Honored by Calif. Cos. Ass'n

Davis Factor, chairman of the board of Max Factor & Co., and president of the national Toilet Goods Association, was honored June 5 at a dinner given by the California Cosmetic Association, at the Ambassador Hotel in Los Angeles. During an address before the gathering, Mr. Factor reported that after a banner year in 1952 the toilet goods industry has reached full adult status with a total yearly volume of over one billion dollars.

DR. L. EARLE ARNOW

Arnow, Vice-President, S & D

Dr. L. Earle Arnow, director of research, has been appointed a vice-president of the Sharp & Dohme division of Merck & Co., Inc., according to William L. Dempsey, president of Sharp & Dohme.

Owens-Illinois Appointments

Harold J. Carr has become director of business research; Henry C. Rudy, director of merchandising; and E. L. Herron, director of advertising, at Owens-Illinois Glass Co. Mr. Carr will incorporate market studies, analyses and forecasts on the national economy, the glass industry and the industries that Owens-Illinois serves. Mr. Rudy will coordinate the merchandising activities of the company and its subsidiaries, while Mr. Herron will coordinate the advertising.

They will all report to Smith L. Rairdon, vice-president and director of marketing.

Stoddard Merges with Yates

The manufacturing facilities of G. S. Stoddard & Co. and Yates Drug Co. have been consolidated, according to Harry Nuse, Yates president, but both firms will continue to operate separately.

As a result, Stoddard has moved its headquarters to 295 Lafayette St., New York, the address of the Yates Drug Co.'s main offices. In the move, Stewart Gregory, vice-president and treasurer of Yates, has been made a director of Stoddard and will also serve as secretary of the acquired firm. Harold D. Pomeroy will remain as president of Stoddard.

The merger will permit the two concerns to expand their outlets since the detail staff of Stoddard, which operates principally in the east, will become available to promote the Yates line. The Yates sales force, located for the most part, in the midwest, will detail Stoddard's ethical specialties.

Lakeside Appointments

Wyman Guin has been appointed vice-president and advertising and product development manager of Lakeside Laboratories, and Harris L. Friedman, director of laboratory and technical research, according to Evan P. Helfaer, president.

Named Merck Counsel

Fred Bartenstein, Jr., formerly general attorney and head of the legal department, Merck & Co., has been appointed counsel.

Davis Factor, center, chairman of the board of Max Factor & Co., receiving plaque from Arnold L. Lewis, president, California Cosmetic Association, at a dinner given by the Association. Alan J. Coghlan, right, was chairman of event.

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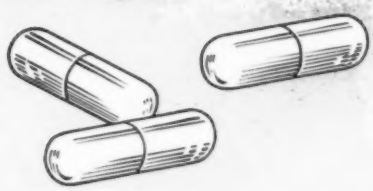

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or POWDERS

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Baker ALUMINUM HYDROXIDE

Baker Aluminum Hydroxide, U.S.P., Dried Gel, in a new free-flowing form, will be welcome news to you as a drug or pharmaceutical manufacturer.

There are a number of reasons why this Aluminum Hydroxide provides more convenient handling for capsules, tablets and powders. It flows more freely. It is less dusty. It pours rapidly from containers without sticking. It mixes more freely in formulations. Capsules fill with far less difficulty.

You can also make smaller tablets with higher acid-consuming capacity because this Aluminum Hydroxide has greater density and improved antacid characteristics.

Baker Aluminum Hydroxide meets the Neutrality, Sulfate and other requirements of the U.S.P. Monograph.

Write for a test sample ... then see for yourself how this new and improved product can help you in your formulations.

Other Baker Chemicals for Antacid Preparations

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REAGENT • FINE • INDUSTRIAL

E. F. ANDREWS

FRED SCHUMM

HARRY O. STARK

Heads Purchasing Ass'n

E. F. Andrews, director of purchases for Pitman-Moore Co., was elected president of the National Association of Purchasing Agents at its convention in the Statler Hotel in Los Angeles. He is a past president of the Indianapolis Purchasing Agents Association and during the past year served as vice-president of the National Association of president of the National Association of Purchasing Agents representing District 4.

Mr. Andrews joined Pitman-Moore in 1946 and was placed in charge of purchases at that time.

Loeffler with Food Machinery

Alfred T. Loeffler, formerly director of development, Monsanto Chemical Co., has joined Food Machinery & Chemical Corp. as assistant vice-president of its chemical divisions. He becomes administrative assistant to Ernest Hart, executive vice-president of chemical divisions, with headquarters in the chemical divisions administrative offices at New York.

Named by Div. Sales Manager

Benjamin G. Stanley has been appointed divisional sales manager of the northwest division of Hoffmann-La Roche Inc., according to Thomas Brown, general sales manager. His headquarters will be at the Twelfth and Walnut Building, Kansas City.

Knapp, Penick Sales Rep.

Robert V. Knapp, formerly with J. L. Hopkins & Co., has been appointed representative for S. B. Penick & Co. in Manhattan below 42nd St. and in Staten Island. This territory had formerly been serviced by Andrew Davey, who has been transferred to the Philadelphia area.

Heads Ungerer Flavor Dept.

Fred Schumm, with over 16 years of flavoring experience, has been appointed manager of the flavor department, Ungerer & Co. He will make his headquarters at the Ungerer plant in Totowa, N. J.

Taylor with Mathieson

Robert L. Taylor, formerly vice-president of Hill & Knowlton, Inc., has been appointed director of public relations of Mathieson Chemical Corp., according to Thomas S. Nichols, president. For a number of years he was editor of *Chemical Industries*, now *Chemical Week*, and prior to that, was associated with Monsanto Chemical Co.

Stark, Domestic Sales Mgr.

Harry O. Stark, formerly manager of the Chicago office, has been appointed domestic sales manager of the pharmaceutical department of the Calco Chemical division, American Cyanamid Co., according to Dr. Carle M. Bigelow, director of that department.

W. O. Brewer, former sales manager, has retired and is being retained as a consultant to the department.

Honorary Degree for Bigelow

Dr. Carle M. Bigelow, director of the pharmaceutical department, Calco Chemical division, American Cyanamid Co., received an honorary degree from the University of Rhode Island last month. He graduated from the University 41 years ago.

Members of the Drug and Pharmaceutical Committee of the Packaging Institute at one of their quarterly business meetings at the Kimble Glass Company's plant. Left to right: A. R. Schettel, Squibb; Dr. D. M. Ashkenaz, Wyeth; H. Earl Nack, Sharp & Dohme; Dr. John C. Bird, Lederle, chairman of the Committee; Dr. L. V. Burton, executive director of the Packaging Institute; M. A. Lauria, Strong Cobb; R. L. Deady, Norwich Pharmacal; L. H. Zahn, Ciba; and E. C. Zimmerman, Bristol Labs.

Lakeside Field Mgrs. Meeting

Lakeside Laboratories Inc. held a 4-day field managers meeting last month during which the firm's home office executives and 11 field managers outlined and discussed plans for the next half of the fiscal year. Ideas for improved professional relations among pharmacists, physicians and professional service representatives were emphasized.

Michael F. Charley, president of the American Pharmaceutical Manufacturers' Association, was the guest of honor. Also honored were the wives of men in the drug industry, the theme of the meeting being, "Second Honeymoon."

The entire affair started with an engraved invitation: the "Bridal Suites" at the Bismarck Hotel, Chicago, were reserved and double bedroom rail reservations were arranged.

At the banquet, a big wedding cake was cut, the privilege going to the last field manager to be married, W. H. Johnson of Toledo.

Hostesses at the function were Mrs. Evan P. Helfaer, wife of Lakeside's president; Mrs. L. L. Gibson, wife of the vice-president in charge of sales; and Mrs. W. A. Hartsone, wife of the domestic sales manager.

Eleven field managers of Lakeside Laboratories, and their wives, attending banquet with other company executives marking close of field managers' meeting. Michael F. Charley, president, American Pharmaceutical Manufacturers' Association, seated at head of table (left), was guest of honor. Theme of meeting, which honored Managers' wives, was "Second Honeymoon."

Hollen with Brockway Glass

G. R. Hollen, formerly with American Stores, has been added to the general line division of the Brockway Glass Co.

McClure, Carbide Exec. V.P.

Harry B. McClure, vice-president of Carbide & Carbon Chemicals Co. since 1944, has been appointed executive vice-president, according to Dr. J. G. Davidson, president. He joined the company in 1928 as a research fellow at Mellon Institute of Industrial Research in Pittsburgh and later became a technical representative in the Philadelphia area. He was transferred to sales work in New York in 1931.

Fretz Joins Verona Chemical

Nathan R. C. Fretz, with Dodge & Olcott for the past 28 years, has joined the Aromatics division of Verona Chemical Co. in a sales capacity.

Lever Bros. Promotions

Raymond F. Underwood, formerly sales vice-president of the Pepsodent division of Lever Brothers Co., has been promoted to general sales manager of the Lever division. He has been succeeded in his former position by A. B. Peterson, merchandising vice-president of the Pepsodent division.

Joseph L. Stevens has been promoted from assistant sales manager of the Lever division to the newly-created post of field sales manager. Ambrose J. Addis, advertising vice-president of the Pepsodent division, has become merchandising vice-president of that division. William H. Scully, advertising manager of the Good Luck division, is now advertising vice-president of the Pepsodent division. William K. Eastham, brand merchandising manager in the Lever division, has been promoted to advertising manager of the Good Luck Division.

Pfizer Buys J. B. Roerig

Chas. Pfizer & Co. has contracted to purchase the outstanding stock of J. B. Roerig & Co., Chicago pharmaceutical house specializing in vitamin preparations. The Roerig firm, with net sales of nearly $6 million last year, will be operated as an independent subsidiary of Pfizer.

The Chicago company will continue operations with its products under the Roerig label and with present personnel, including the entire detail (pharmaceutical sales) force of trained nutritionists.

To Handle Sterwin Line

Page Johnson has been appointed to the staff of Blaine Thompson Brokerage Co., Inc., as sales representative handling the products of Sterwin Chemicals Inc., according to Peter V. Metcalf, vice-president and manager. He will work under the direction of Mr. Metcalf, with headquarters in Dallas.

The Thompson firm has been exclusive sales representative for Sterwin in Texas, Louisiana, Oklahoma and Colorado since 1941.

HARRY B. McCLURE

A. B. PETERSON

AMBROSE J. ADDIS

THE MOST BEAUTIFUL CONTAINERS EVER MADE—*KIMBLE OPTICLEAR VIALS*

Here's how to give your product a container that is useful as it is modern and beautiful—pack it in Opticlear Vials.

Trim, sparkling Kimble Opticlear Vials keep contents fresh, dry and clean . . . free from dust, dirt and moisture. The resilient, plastic stopper seals tightly . . . keeps contents protected with a positive moisture-proof seal.

Distinctive Opticlear Vials improve the salability of every dry product packaged in them. See how attractive your product will look in them, too. Send us the sizes you use and we'll ship free samples for your inspection.

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Toledo 1, Ohio—*Subsidiary of Owens-Illinois Glass Company*

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Day after day, chemists in Du Pont laboratories work toward one—and only one—goal: the creation of finer, higher-quality synthetics and aromatic compounds. This extensive research can help provide the answers to *your particular soap problem* . . . can help you achieve the *perfect fragrance* for your soap products.

For advice on your formulations, or the way to give your favorite scent an extra sparkle, contact the nearest district office, or write: E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Aromatics Section, Wilmington 98, Delaware. *District offices:* New York, Chicago, Los Angeles, Providence, Philadelphia, Charlotte, Atlanta.

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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

Pfizer Syntex Products

Chas. Pfizer & Co., Inc. and Syntex S. A. have announced plans to market a line of steroid hormone products both in bulk and finished package. This new line will be added by Pfizer to its present one and will be sold as a specialty group to be known as Pfizer Syntex Products.

Syntex S. A. is a major producer in Mexico City of bulk hormones and steroid intermediates made from vegetable root sources. There will be close scientific cooperation between the two organizations and, according to Dr. I. V. Sollins, president of Chemical Specialties Co., Inc., which had previously distributed the Syntex products in bulk form, the broad and diversified marketing organization of Pfizer will improve on the Syntex distribution and will also provide an entirely new outlet for Syntex large-scale production by entering the pharmaceutical field.

John E. McKeen, president of Pfizer, states that that firm will continue to supply the pharmaceutical industry with steroid hormones in bulk form.

Among the new compounds which are expected to be ready for marketing in the near future is hydrocortisone (compound F). Both Syntex and Pfizer plan to expand their research programs in the chemical and microbiologic fields in order to produce the newer steroid hormones more rapidly and in greater quantities than have hitherto been available.

Pfizer will immediately replace Chemical Specialties Co. in the marketing of bulk hormone products and will announce its plans shortly in respect to a packaged line of hormone products.

Pfizer's extensive know-how and background in the fermentation field will be combined with the long experience of Syntex in the organic chemical synthesis of steroid products from vegetable root sources grown in Mexico.

Importing Italian Pumice

Whittaker, Clark & Daniels Inc., having recently sold its pumice operations at Grants, New Mexico, operated by its subsidiary, Pumice Corp. of America, is now importing specially selected crude pumice from Italy for grinding and processing at its new plant in South Kearny, N. J. Whittaker's resident agent at Lipari, Italy, inspects and ships only the purest pumice that is free of all obsidian and foreign matter.

A large inventory of the crude ore is maintained at South Kearny, to insure uninterrupted production and shipment.

LARRY W. WELCH

Welch Heads Sales Council

Larry W. Welch, general sales manager for Pitman-Moore Co., has been elected president of the Indianapolis Sales Executives Council.

EDMUND J. DEMPSEY

Dempsey Joins Lehn & Fink

Edmund J. Dempsey, formerly, assistant to the president, the American Cyanamid Co., has been named general manager of manufacturing for Lehn & Fink Products, Inc., according to Edward Plaut, president.

Horsey Interviewed on Radio

R. E. Horsey, vice-president in charge of sales of Givaudan-Delawanna, Inc., participated in the weekly radio program of the American Chemical Society on June 25. He was interviewed by Edward J. Reardon of the Society on the subject of aromas in various industrial and household products.

Lightfoot with Monsanto

Charles L. Lightfoot Jr. has become a member of the pharmaceuticals sales department of Monsanto Chemical Company's organic chemicals division, according to John L. Hammer Jr., general manager of sales for the division. He will assist Gerald F. Pauley, department manager, in the sale of Monsanto pharmaceuticals.

Named Research Director

Robert A. Walsh, formerly assistant professor of Biology and Pharmacology at the Massachusetts College of Pharmacy, has been appointed director of research and product development at the E. L. Patch Co. He succeeds Dr. Charles A. Cook, who resigned from that position on April 1.

Mr. Walsh has served the Patch Co. on a part-time consultant basis since May, 1943, while teaching at the college.

ROBERT A. WALSH

Appointed by Dow

B. T. Bush, Jr., has been appointed to handle aromatic sales for the Dow Chemical Co., according to Donald Williams, vice-president and director of sales. He will be associated with the fine chemical sales section with headquarters in Midland. Mr. Bush has been head of the company's aromatics laboratory in Jersey City, N. J., for the past three years.

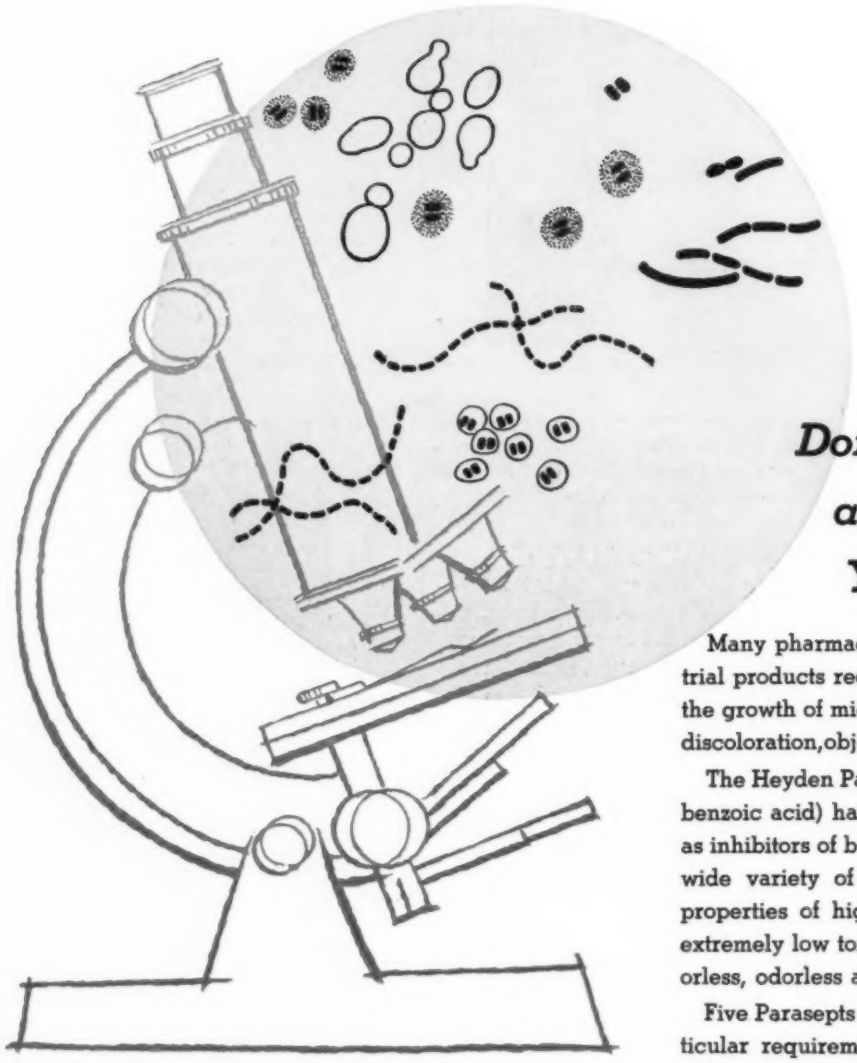
John Hancock has been appointed director of the aromatics department to succeed Mr. Bush, according to Dr. D. E. Pletcher, director of Dow's aromatics department.

B. T. Bush, Sr., former head of Bush Aromatics Inc., until the firm was acquired by Dow in 1950, is continuing to serve in a consulting capacity on special phases of aromatics research and development. He has been active in Dow's aromatics program since 1950.

"The Givaudan Flavorist"

Givaudan Flavors Inc. has printed the first issue of a new flavor publication, *The Givaudan Flavorist*. In a letter printed on page one, E. R. Durrer, Givaudan president, states, "It will be our earnest effort to make our new publication an authoritative and objective source of information on problems related to your industry."

Copies of the first issue, and of subsequent issues, may be obtained from the New York office, 330 West 42nd St.



Don't Let Bacteria and Fungi Spoil YOUR Product!

Many pharmaceuticals, cosmetics and industrial products require a preservative to prevent the growth of microorganisms which may cause discoloration, objectionable odor or deterioration.

The Heyden Parasepts (esters of parahydroxybenzoic acid) have long given valuable service as inhibitors of bacterial and fungal growth in a wide variety of products. They combine the properties of high effectiveness, stability, and extremely low toxicity, in addition to being colorless, odorless and practically tasteless.

Five Parasepts are available to meet your particular requirements. Research has shown the advantages of using a combination of two or three esters, which gives better protection against microbial contamination than any one ester.

HEYDEN PARASEPTS®

Write for a copy of the technical bulletin on the Parasepts. Samples (Purified or Technical) are available promptly on request.

METHYL PARASEPT
(Methylparaben U.S.P.)
ETHYL PARASEPT
PROPYL PARASEPT
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Shipped in 100, 50 and 25-lb. fiber drums.

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MARSHAL N. DE NOYELLES

de Noyelles, Mgr., Chem. Sales

Marshal N. de Noyelles has been appointed manager, and Frank Black, assistant manager, of the chemical sales division of Chas. Pfizer & Co., Inc., according to John E. McKeen, president.

Mr. de Noyelles, who has been serving as assistant manager of chemical sales, succeeds the late Robert H. Briggs. Mr. Black was formerly manager of medicinal chemical sales.

Paul E. Weber, previously western regional sales manager in the chemical division, has been promoted to national field sales manager.

Mr. de Noyelles has been associated with Pfizer since 1916. Prior to his appointment as assistant sales manager earlier this year, he served in a series of sales capacities, including regional sales representative, eastern regional sales manager, and national field sales manager.

Nichols Promoted by Abbott

Robert W. Nichols has been promoted from assistant sales manager to sales manager of the chemical sales division, Abbott Laboratories. He will report to Floyd K. Thayer, vice-president and director of that division.

Atlanta Drug & Chem. Lunch

Approximately 30 members of the Atlanta Drug & Chemical Club were guests of George Fellows, Fritzsche Brothers, at his country home at Avondale Estates, Georgia on June 20. They all enjoyed a fine lunch, with Mr. Fellows presiding at the charcoal grill, following which was a short business meeting with reports from some of the officers and committee chairmen.

N. J. Zinc Appointments

Philip M. Ginder has been elected a vice-president, and George F. Halfacre, manager of manufacturing of the New Jersey Zinc Co. Mr. Ginder is also vice-president of the New Jersey Zinc Co. (of Pa.).

Remington Medal to Muldoon

Dr. Hugh C. Muldoon, Dean of the College of Pharmacy of Duquesne University, Pittsburgh, will receive the Remington Honor Medal, according to the American Pharmaceutical Association. The medal will be presented at a dinner meeting of the New York branch of the A. Ph. A., probably in December of this year.

In citing their reasons for the selection of Dr. Muldoon, the jury of award called attention to his outstanding service to the profession for several decades as an educator, author and scientist and his special contribution, in the year just passed, as chairman of the Committee on Centennial Celebration of the Association.

ROY W. HAGELIN

Hagelin, de Laire Rep.

Roy W. Hagelin has been appointed eastern representative of de Laire Inc., according to Louis Bezard, president.

He had been manager of the essential oils division of S. B. Penick & Co. for four and one-half years, and previous to that, he had been with Dodge & Olcott for 16 years when he became familiar with the de Laire line.

Mr. Hagelin brings with him a background of 25 years of experience in the perfume and aromatic field.

Kendall Named Consultant

C. O. Kendall has been appointed a consultant in the products division of Becton, Dickinson & Co., according to Henry P. Becton, executive vice-president. He had formerly been director of product planning for E. R. Squibb & Sons.

Heidt Joins D&C Sales Force

Henry Heidt, formerly associated with the National Biscuit Co. and Schoonmaker Laboratories, has joined the metropolitan sales staff of Dodge & Olcott, Inc.

Foster Heads Mfg. Chemists

William C. Foster, formerly the Deputy Secretary of Defense, the Administrator of ECA, and president of the Pressed and Welded Steel Products Co., was elected first full-time president of the Manufacturing Chemists' Association at its 81st annual meeting on June 11 at White Sulphur Springs. He will direct the Association's activities from its headquarters in Washington.

Charles S. Munson, chairman of the board of Air Reduction Co., and formerly president of the Association, became chairman of the board. F. J. Emmerich, president of Allied Chemical & Dye Corp., was named vice-chairman.

Paul L. Davies, president of Food Machinery & Chemical Corp., and Kenneth C. Towe, president of American Cyanamid Co., were elected vice-presidents. M. F. Crass, Jr., was elected secretary-treasurer.

New directors of the Manufacturing Chemists' Association for the term expiring May 31, 1956, are: Stanley Crossland, Ethyl Corp.; R. L. Hockley, Davison Chemical Corp.; Howard S. Bunn, Union Carbide & Carbon Corp.; John R. Hoover, the B. F. Goodrich Chemical Co.; Walter Dannenbaum, E. I. du Pont de Nemours & Co.; James J. Kerrigan, Merck & Co.; Thomas S. Nichols, Mathieson Chemical Co.; E. W. Reid, Corn Products Refining Co.; and J. Albert Woods, Commercial Solvents Corp.

Carl A. Gerstacker, the Dow Chemical Co., was elected a director, and the term of Rothe Weigel, Victor Chemical Works, was extended a year.

Creamer Appointed by S & D

Dr. Alan A. Creamer has been appointed manager of the veterinary department of Sharp & Dohme, division of Merck & Co., according to E. S. Barclay, director of biological production. He replaces Dr. Bernard J. McGroarty, who retired recently.

DR. ALAN A. CREAMER

IN WHICH *the* T. G. A. ANSWERS CERTAIN CRITICISMS

THIS ADVERTISEMENT is designed to answer the most frequent criticism of The Toilet Goods Association, its management, and, more particularly, its activities. It has frequently been stated by those who, for one reason or another, are not members of the Association that "it is run by a small group of big fellows", to which is usually added "in New York". The implication has always been that this "small group" *runs it* for their own peculiar benefit. Nothing could be further from the truth.

A GLANCE at the Directorate of the Association shows clearly that its members are by no means confined to the ranks of the "big fellows" and that they are by no means all "in New York". Instead, the members of the Board of Directors have over the years been most carefully chosen to represent every phase of the industry and every group of industry products, every section of the country where cosmetics are a major industrial factor, and every size of company. These directors and the officers, who incidentally are chosen with the same thought in mind, establish the general policies of the Association. It is certain that were they biased or selfish in their views, those on the Board whose interests might be hurt by such an attitude would be most vocal in their opposition. Has anyone heard a Director voice this common criticism?

THE BUDGET of the Association for a comparatively small industry is a substantial one. Apportioned among our membership that budget indicates that the cost of servicing the small manufacturer in the lowest dues bracket is approximately four and one half times the annual dues received from him. Every member pays dues in accordance with his ability to pay. Every member from the largest to the smallest gets exactly the same service from the Association and its staff. When we oppose unfavorable legislation; when we secure favorable rulings on disputed matters from Government Bureaus; when we work to protect trade marks; when we promote scientific research for the betterment of industry products, the results are equally available to the little fellow and the big fellow and to the manufacturer in Charleston Four Corners and the manufacturer in New York,—and, incidentally, *non-members often get equal benefits with those who pay*.

WE ARE NOT embarrassed by this criticism. Among our members are hundreds of little fellows who are delighted with and proud of their membership. May we suggest, however, that our critics find some new and sound ground for their criticism (undoubtedly many such grounds exist) and that they then tell *us* what's wrong. At which point we will do our level best to correct the errors of our ways.

THE TOILET GOODS ASSOCIATION, INC.
9 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Further advertisements in this series will present to the industry what we feel will be an interesting picture of your Association's activities. Please read them and get to know us better.

C. MONROE WIEGAND

NORMAN C. CHADWICK

Named Avon V.P's.

C. Monroe Wiegand has been appointed vice-president of Avon Products, Inc., in charge of purchasing, at the firm's main office in New York, and Norman C. Chadwick has been named vice-president in charge of sales promotion and merchandising, according to John A. Ewald, president.

Mr. Wiegan had formerly been director of purchases and Mr. Chadwick, general sales promotion manager.

Braun Promoted by Merck

Eric R. Braun, formerly director of the engineering division of Merck & Co., has been appointed assistant to the vice-president for operations. He will supervise and coordinate the engineering, purchasing and traffic activities of the company under the general direction of the vice-president for operations.

Bodine Joins Heyden Chemical

James R. Bodine, with the market research department of Merck & Co., has joined the market development department of Heyden Chemical Corp., according to Simon Askin, president.

Aschenbach, Arner Controller

Robert Aschenbach has been appointed controller of the Arner Co., according to Dr. Niels C. Klendshoj, president.

Amer. Alcolac Moves Offices

American Alcolac Corp. has moved its New York offices to larger quarters at Suite 7810, Empire State Building, 350 Fifth Ave., New York 1. The telephone number is OXford 5-2482.

Chandler—Zimmerman

Lois Ann Zimmerman, daughter of Mr. and Mrs. W. F. Zimmerman (W. F. Zimmerman, Inc.), was married June 13 to Dr. Arthur Chandler of Detroit.

Represents German Mftrs.

The Pan American Supply Co. has taken over the exclusive distributorship for the United States and Canada of a number of leading German manufacturers in the packaging machinery field. The company represents, among others, the Ganzhorn & Stirn Machine Mfg. Co. and Weiss Machine Mfg. Co.

The sales program of Pan American includes high-speed automatic machines and hand-operated units and covers filling, labeling, capping, cartoning and similar machines.

The fully automatic Gasti (Ganzhorn & Stirn) tube filling, closing and crimping machines range in capacity up to 85 tubes per minute. The Jowe (Weiss Machine) automatic labeling machines have an output up to 18,000 units per hour.

Pan American hopes to introduce their machines to the entire American industry in a short time.

Named West Coast Rep.

Joseph Notara has been appointed West Coast representative of Caryl Richards, according to Milton Barrie, vice-president.

Anzlowar with Eaton Labs.

Boris Anzlowar has been appointed assistant to the medical editor, Dr. R. J. Main, of Eaton Laboratories.

Re-elected to Chamber Post

L. Tracy Sheffield, president of Sheffield Tube Corp., has been re-elected director of the Connecticut Chamber of Commerce.

Named Export Advg. Mgr.

Charles E. Robert, assistant advertising manager, has been appointed export advertising manager of Northam Warren Corp., according to Northam Warren, president.

Expands Foreign Business

Warner-Hudnut, Inc. has divided its foreign business, comprising 122 countries, into three major geographical operations, according to Elmer H. Bobst, president.

Frank C. Cleary, Canadian manager, has been named director of British Commonwealth and Far Eastern Operations. Robert H. Gleckner, manager for Mexico, has become director of Latin American Operations. Paul R. van der Stricht, former secretary of Heyden Chemical Co. and president of Heyden Export Corp., has joined Warner-Hudnut as director of European operations.

Mohrman with C.S.C.

Robert A. Mohrman has joined the sales staff of the industrial chemicals department of Commercial Solvents Corp., working out of the New York district office, according to W. Ward Jackson, general manager. He had formerly been with the Barrett and nitrogen division of Allied Chemical & Dye Corp., and with the Borden Co.

Frank R. Henderson

Frank R. Henderson, Sharp & Dohme sales representative for 30 years, died May 30 at Chevy Chase, Md. He was 60 years old. He had been a special government representative for Sharp & Dohme in Washington for many years.

He is survived by his wife, Grace L. Henderson; one son, Frank R. Henderson, Jr.; his father, James P. Henderson, and three brothers and three sisters.

Dr. Ferdinand Sonneborn

Dr. Ferdinand Sonneborn, founder and president of L. Sonneborn Sons, Inc., died June 9, after a long illness. He was 79 years old. He came to this country in 1903 and established the company, subsequently purchasing the Daugherty Refinery at Petrolia. During the first world war, he introduced the refining of mineral oil in the U.S.

Surviving are his wife, Mrs. Helen Goldschmid Sonneborn, and a brother, Samuel Sonneborn.

Mrs. Grace A. Dow

Mrs. Grace A. Dow, widow of Herbert H. Dow, founder of the Dow Chemical Co., died June 28 at her home after a long illness. She was 84 years old. Surviving are a son, Alden B. Dow, an architect; two daughters, Mrs. Anderson Arbury and Mrs. Harry A. Towsley; and several grandchildren and great-grandchildren.

YOU'LL GET *Bouquets* EVERY DAY IF YOU USE *Penick* *Perfume Compounds*

ORCHIDS TO YOU! That's what your customers will be saying if you use Penick Perfume Specialties as the basis of new creations, or to improve your present creations.

Penick Perfume Bases are triumphs of the art of combining fragrances. Each is made from the finest natural oils and aromatics, and these convey the true floral scent to the finished product. Each is compounded with special fixatives to insure its shelf-life. All you have to do is add the desired alcohol, or add the compound as is, to dry mixtures.

For alluring perfumes, colognes, toilet waters, bath salts or soaps, investigate Penick Perfume Bases. . . . Test them for yourself . . . a request on your letterhead will bring you samples. Write Dept. DC-8.

We especially invite your investigation of—

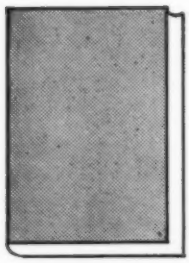
EXOTIQUE No. 6270 — *JASMINE-GARDENIA No. 7620*
BOUQUET D No. 7618 — *FLORAL BOUQUET No. 7653*

S. B. PENICK & COMPANY

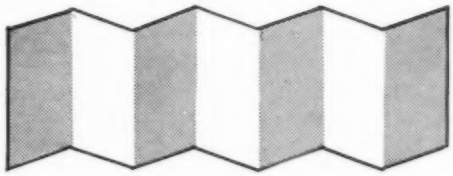
50 Church Street, New York 7, N. Y.
Telephone COrtlandt 7-1970

735 West Division Street, Chicago 10, Ill.
Telephone MOhawk 4-5651

DISTILLERS OF RARE AND QUALITY ESSENTIAL OILS—MANUFACTURERS OF AROMATIC CHEMICALS



Trade Literature



Brockway Containers

Brockway Glass Co., Brockway, Pa., have issued a catalog of their pharmaceutical containers. Descriptions of Brockway's stock lines of Temperglas containers of particular interest to the pharmaceutical field are given, enabling manufacturers to obtain a detailed picture of each container regularly carried in stock. Information is also given concerning private mould containers or containers with applied color labels which are not stock items.

Resorcinol Uses

Uses of resorcinol, an intermediate chemical for pharmaceutical and industrial production, are described in a 16-page illustrated booklet issued by the Chemical Division of Koppers Company, Pittsburgh 19. Listing and illustrating finished products in whose manufacture resorcinol plays a valuable part, the booklet cites the use of the chemical in medicines and cosmetics, as well as other products.

Problems of Construction

An illustrated brochure, Typical Projects and Problems of Industrial Construction, has been published by Robert E. Lamb & Sons, industrial builders, 3429 West Indiana Ave., Philadelphia 32. The booklet is for companies who are finding it necessary to re-align their production, and their development and construction programs to meet increasingly competitive peacetime conditions. It calls attention to the need for readjustments in plant and production facilities as demand for war supplies levels off. A summary check list of some of the typical construction problems facing industry, as the competition for peacetime market grows, is set forth.

Aerosol Containers

Island Equipment Corp., 27-01 Bridge Plaza North, Long Island City 1, N. Y., has issued a 4-page folder describing the production of Aerosol propellent containers of various products. It is a concise story of filling and packaging and shows some typical layouts of equipment, with photographs.

Croda Fatty Alcohols

Croda Inc., 51 Madison Ave., New York 10, has published a folder giving information on their Crodacol line of fatty alcohols. Through an error in our June issue, these products were described as "fatty acids" instead of "fatty alcohols."

Container Handling

Island Equipment Corp. has also issued a folder describing a new high-speed Unscrambler called the Walkie-Pushie (for odd-shaped containers). The folder features the step-by-step stages of the unscrambling cycle as well as many photographs.

Stokes Microvac Pumps

F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, has issued a new, extensively revised edition of its 36 - page catalog, Stokes Microvac Pumps for High Vacuum. The new catalog, No. 750, includes valuable tables of formulas, constants, and conversions frequently used in vacuum processing; and useful information on continuous oil purification and other maintenance procedures for high vacuum pumps. Installation of Stokes high vacuum pumps, many of which are illustrated, include drying of blood plasma; freeze - drying of penicillin, streptomycin, hormones, and other biologicals and pharmaceuticals.

Metal Hose Catalogue

Titiflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J., has issued catalog No. 200, which is said to be one of the most comprehensive and informative metal hose catalogs ever printed.

Fisher Mobilab

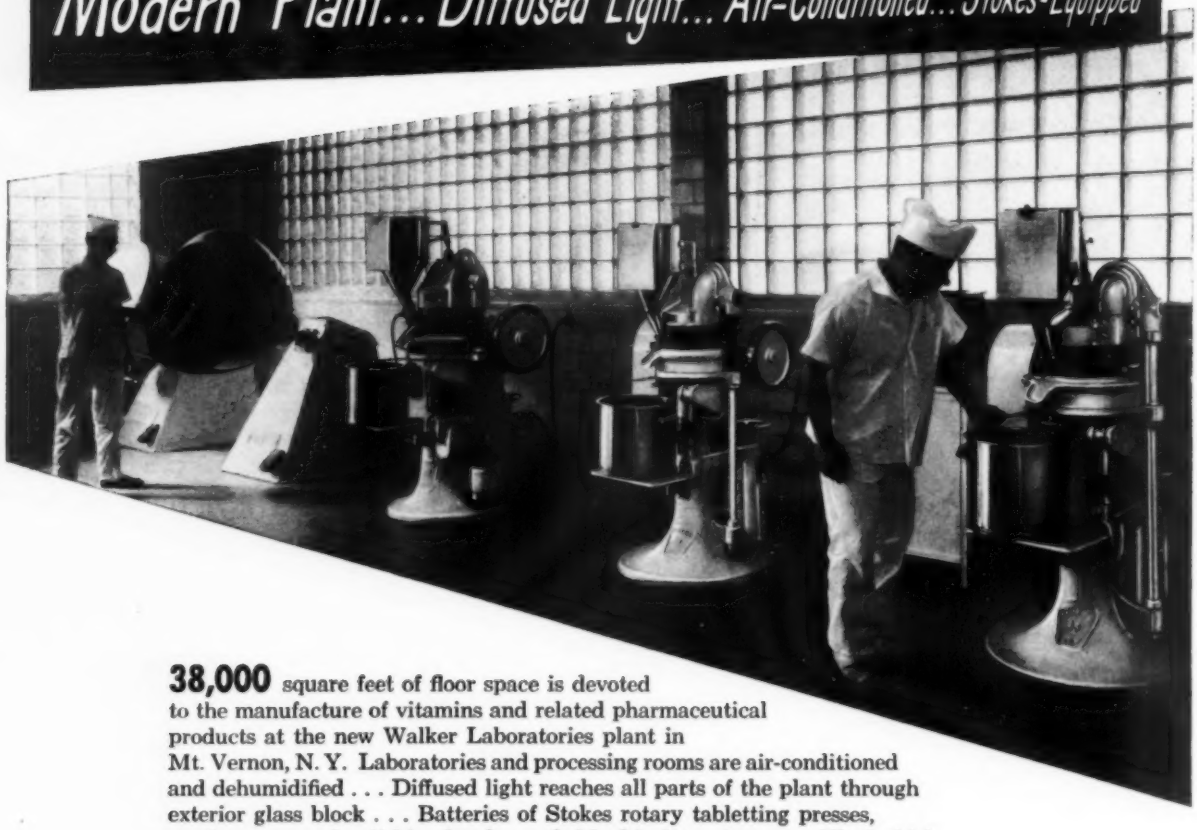
Fisher Scientific Company, 717 Forbes St., Pittsburgh 19, has issued a booklet describing the Fisher Mobilab which is the first complete testing laboratory-on-wheels ever sold "over-the-counter" by a scientific service house. The Mobilab was developed in response to the rapidly growing use of mobile laboratories in science and industry. Such laboratories have hitherto been custom-built, at high costs for development and special construction.

Data on Freeze-Drying

The F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, has brought out a new up-to-date 16-page brochure on Laboratory Freeze-Drying. Known as catalog No. 740, this booklet has been issued as the result of the rapidly growing use of freeze-drying as a method of preserving foods, pharmaceutical and biological preparations, human tissues, and veterinary products. The process, by which the material to be preserved is first frozen and then "bled" of its moisture under high vacuum, allows the remaining substance, when sealed in the vacuum (or occasionally under inert gas), to be kept at room temperature almost indefinitely.

The Stokes range of equipment, which is intended primarily for use of research laboratories in industry and institutions, includes units for drying on manifolds or in heated chambers, and using either Cryochem regenerative chemical dessicant, or dry ice or freon condensation.

Modern Plant... Diffused Light... Air-Conditioned... Stokes-Equipped



38,000 square feet of floor space is devoted to the manufacture of vitamins and related pharmaceutical products at the new Walker Laboratories plant in Mt. Vernon, N. Y. Laboratories and processing rooms are air-conditioned and dehumidified . . . Diffused light reaches all parts of the plant through exterior glass block . . . Batteries of Stokes rotary tabletting presses, coating pans and polishing heads are finished in ivory tone . . . All of which combine to provide a fine example of the pharmaceutical house of today.

All Stokes tabletting presses, whatever the size of tablet or speed of operation, produce tablets perfect in size, weight, density and finish.

Advantages to the many pharmaceutical firms using Stokes equipment include high-speed production, low-cost operation, uniformity of product and notable dependability.

Punches and dies for Stokes tabletting presses, including carbides for long runs or abrasive materials, are made in the Stokes plant. Send for the booklet, "How to save Money on Punches and Dies" and for Catalog No. 800, "Stokes Tabletting Presses."

F. J. Stokes Machine Company,
Philadelphia 20, Pa.

STOKES

STOKES MAKES Plastics Molding Presses / Industrial Tabletting and Powder Metal Presses / Pharmaceutical Equipment / Vacuum Equipment / High Vacuum Pumps and Gages / Special Machinery

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Sales Complacency

Complacency is a deadly soporific for every salesman. The salesman who is so sure of his accounts that he doesn't worry continually about whether his customers are getting the right quality, service and price, is skating on very thin ice. Complacency in a salesman is a very powerful opiate. I have seen accounts switched from one supplier to another without any warning whatever to the salesman who had had the accounts—in some cases for years. I remember on one occasion a large set up box account was suddenly switched from the salesman who had it for twenty years simply because the salesman, who had had the account, was so certain of his customer that he had failed to pass on voluntarily price reductions which would have kept him competitive. When a new general manager took over the customer's business and discovered what was going on, the complacent salesman irretrievably lost a big account. A salesman should make it a point to learn as much as possible about the management setup of his accounts and also the company's politics. Whenever management changes take place the salesman can be sure that changes within his customer's organization also will take place and that these changes might affect his business with that particular company. He should therefore move fast to protect his own and his employer's interests.

One of the most fallacious bits of complacency that I have heard on many occasions, is that an account will never be switched from a certain supplier because the supplier "took care" of the customer during the war when the going was tough. This is a dangerous reliance for the salesman. He cannot morally expect the customer to go on forever feeling a deep sense of gratitude for favors done during a period of war shortages. The salesman's employer did not lose any money when, during the period of war shortages he favored one customer over another. Actually, suppliers made more money than they would have otherwise because they had fewer and larger accounts on the books to service. Moreover whenever they could get away with it they didn't hesitate to add a little extra clip for the extra service they were giving particular customers. On the other hand, I know that many customers remember and feel grateful for extra attention given them by suppliers during the war, and all things being equal, are disposed to favor these suppliers above others. But the wise salesman will do well to remember the phrase "all things being equal."

The following information is supplied by manufacturers of the equipment described and claims made below by these manufacturers are passed along for what they are worth. Presentation of such notice in this department is not to be taken as endorsement of the claims or of the equipment.

Gas Driven Fork Truck

Development of a radically new fork lift truck which provides unprecedented fuel economy, smoothness of acceleration, ease of maintenance, safety and operator convenience was announced recently by The Baker-Raulang Company.

Called the "Gas-O-Matic," the new truck achieves many of these operating advantages through a unique transmission system that needs no clutch nor gear shift.

It uses a gasoline engine, a specially-designed variable voltage generator and an electric motor as its power system.

Key element in the system is the variable voltage generator, which is an integral assembly with the engine connected to the drive shaft. As engine RPM increases, voltage output of the generator builds up, following a smooth unbroken curve pattern.

Briefly, this is how the new Baker truck works: a Hercules gasoline engine is directly coupled to Baker's exclusive variable voltage generator, which is in turn connected through electric wiring to a drive motor on the drive axle. Energy developed in the engine is sent

What's this combination got . . . that others lack?

The answer holds vital interest for every manufacturer of aerosol dispensed products.

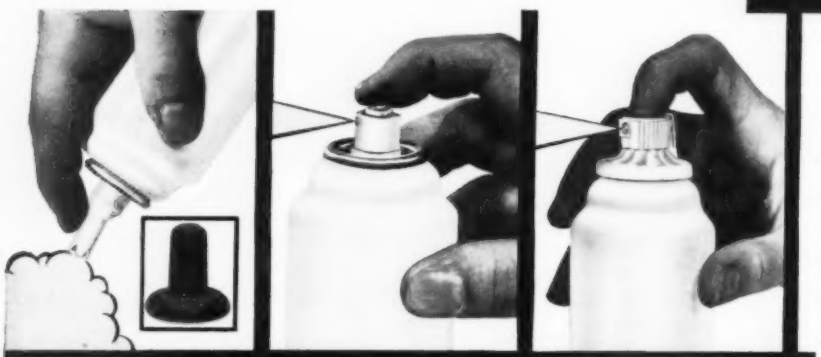
Pres-O

The valve that has satisfied more than

TEN MILLION USERS

on nationally advertised cosmetic products

. . . and here's the TOP Story in current aerosol history!



TILT-TOP
for foam products: shaving cream, whipped cream, etc. Tilt the top to operate.

TOUCH-TOP
for perfumes, hair lacquers, insecticides, paints — for anything sprayable. Light finger pressure operates it.

TWIS-TOP
for spray *or* foam. Unit construction. Easiest to use. No parts to lose. A twist opens or closes it. No after drip or puff.

- Self cleaning. Non clogging
- No drips, leaks or after-puffs
- Super resistant to corrosion
- Continuingly trouble-free operation
- Spray pattern controllable
- Easier to assemble
- Good for *any* type aerosol container
- Permits pressure or refrigeration filling
- For spray — from mist to coarse — *and* for foam
- Ease of operation delights consumers

and still other advantages we'll be glad to tell you about.

Pres-O — and only Pres-O — offers a *complete* line, a line which includes *individualized styling for your product,* a line which *covers every need for pressure package dispensing.*

THINK what this great combination can do to help your product win still wider acceptance!

Investigate . . . NOW!

OIL EQUIPMENT
Laboratories, Inc.
Bridge Street • Elizabeth, N. J.

to the generator—which acts as a "booster" for the drive motor.

Travel speed is controlled entirely by foot pressure on the accelerator, with no gears to shift. Travel direction is controlled by "forward" and "reverse" foot buttons, leaving the operator's hands free for steering, lifting and tilting.

Baker engineers claim the Gas-O-Matic improves on the inherent simplicity of electric truck design, and at the same time provides the speed and round-the-clock power availability of gas engine equipment. And, according to the manufacturer, Gas-O-Matic design removes the major maintenance points of both electric and gas trucks.

Elimination of the clutch and gear shift cuts out two traditional high-replacement components of any gasoline driven vehicle. Also eliminated are the controller and resistors which have always been major maintenance elements in battery-powered trucks.

From a design standpoint, Baker claims, the Gas-O-Matic is by far the simplest of any industrial truck now available. It is the simplest to operate, and easiest and most economical to maintain, according to the manufacturer.

The Gas-O-Matic's motor-generator hookup was designed so that engine RPM is never excessive. This lower engine speed means less maintenance, longer life.

Cuts Fuel Consumption 30%. Pilot model of the Gas-O-Matic was given a thorough "shake-down" by an independent testing organization. It was put to work on heavy warehousing and carloading jobs for a 15 day test period.

The trial showed that over the month-and-a-half period, gasoline consumption of the unique new truck was about 30% less than any other gas-powered fork truck available.

Baker engineers explain this remarkable fuel economy by pointing out that the Gas-O-Matic's engine is always operating at optimum RPM.

Allows Perfect "Inching" Control. The smoothness of acceleration and "inching" control afforded by the new Baker truck compares with that of the modern, automatic-transmission passenger car. And for just about the same reasons: there is no clutch nor gear shift, and therefore no chance of jerky starts.

This control over inching allows operators to spot loads more quickly and easily, with less jockeying. Smooth acceleration means the elimination of shocks to the truck and load.

Permits Easy-Reach Maintenance. Because the most troublesome truck maintenance elements have been removed by the Gas-O-Matic's design, repair and upkeep of the new truck is greatly simplified.

And, to make necessary maintenance work easier to accomplish, the Gas-O-Matic's design was kept open and accessible. Top and side panels of the engine-generator compartment are hinged to swing wide open, permitting easy access to any part of the engine or generator.

Reduces Fire, Fume-Poisoning Hazards. To eliminate the fire hazard of backfiring, the Gas-O-Matic substitutes the exhaust chamber for the conventional exhaust pipe. By forced dilution of gas fumes with air and directing the mixture upward and away from the operator, danger of carbon-monoxide poisoning was eliminated.

The danger of running into workers or objects is minimized by the Gas-O-Matic's unobstructed vision, automotive steer, positive braking and quick-response to speed control.

Cuts Operator Fatigue. Driving the Gas-O-Matic is extremely simple. To move forward, the operator steps on the forward foot button with his left foot and accelerates with his right. To reverse, he steps on the "reverse" button while accelerating. Travel speed is controlled entirely by his foot pressure on the accelerator pedal. There are no gears to shift at any time.

The driver's seat is off-set, slightly left of center, and there is no cowl—giving him full visibility in front of the truck.

Other major components outside the power plant in the new Baker truck are Baker's patented trailing axle, which allows it to "step over" floor obstructions and uneven surfaces—and permits easier, tighter turns; the Baker worm-gear driven power axle; safe, low pressure hydraulic system for lifting and tilting; and all-steel electrically welded frame.

Specifications of the Gas-O-Matic, which is now available in a 4000-pound capacity model, are:

Overall length	123 inches
Overall width	39 "
Turning radius	78 "
Standard lift	83/130
Minimum intersecting aisle	69 inches
Overall heights	83 "
Maximum travel speed	8 MPH
Weight	7500 pounds

Shadograph Scale

The Exact Weight Scale Co. announces a new addition to their established line of famous Shadograph models with a newly designed center tower type, 4200 Series, which incorporates all the popular features of the previous models of the widely used Shadograph scales plus added improvements.

The new center tower Shadograph design has a commodity platter on one side of the tower and a counterweight platter on the other side. The scale is built with the beam and poise mounted conveniently on the front of the scale for easy accessibility. Since the beam and indicator dial are in direct line with the operator's vision, these features are of particular value in operations which require frequent changing of the poise setting. Changing weights on the exposed weight platter is simplified on the new model.

Similar to the original Shadograph line, the 4200 Series has the reflected shadow type of weight indica-

Beautiful craftsmanship in the Matchabelli Crown bottle, in keeping with the traditional excellence of the perfume, calls for impeccable labeling — deftly accomplished by applying the label in the recessed base of the flask . . . a precision registry that calls for a

PONY LABELRITE®

534

NEW JERSEY MACHINE *Corporation*

AUTOMATIC LABELING • PACKAGING — PAPER BOX MACHINERY • MAKERS OF THE PONY LABELRITE

FACTORY SALES AND SERVICE BRANCHES
CHICAGO, CINCINNATI, LOS ANGELES

MAIN OFFICE & FACTORY: 1550 WILLOW AVENUE, HOBOKEN, N. J.

tion. The shadow indication is produced by an arm extension on the moving lever system, which intercepts a beam of light emanating from a lamp. This causes a shadow to be cast onto a frosted glass dial, through condensing and projecting lenses and the use of reflecting mirrors. All mechanical indication is eliminated, thereby, frictionless indication is produced. Since the indicator shadow is cast onto a flat glass plate, all possibility of parallax reading is eliminated. Weighs true on out-of-level surfaces.

The combination of highly polished Brazilian agate bearings and induction-hardened tool steel knife-edges assures extreme sensitivity and long life accuracy. Greater speed is obtained through a reduction of lever movement and by action of an adjustable damping device.

The 4200 Series is furnished in a capacity range from 50 grams, with a sensitivity of 10 milligrams, to 1500 grams with a sensitivity of 350 milligrams.

The Shadograph has enjoyed wide usage and popularity in all types of industry and, due to its adaptability, there are numerous operations in the pre-determined weight field in which the Shadograph has proven itself to be outstanding. The Shadograph is also available in arsenal specifications for weighing the propellents and explosives used in all types of ammunition. The Exact Weight Scale Co., Columbus, Ohio.

Aerosol Packaging

Until a short time ago, Pres-O aerosol valve, product of Oil Equipment Laboratories, Elizabeth, New Jersey, was supplied exclusively to custom trade, chiefly in the insecticide and cosmetic fields. Recent change in sales policy and development of some new and interesting features, have now made this valve available to the open market, where it is getting wide attention from producers of cosmetics, insecticides, Shaving cream and whipped cream, paints—and other aerosol dispensed products.

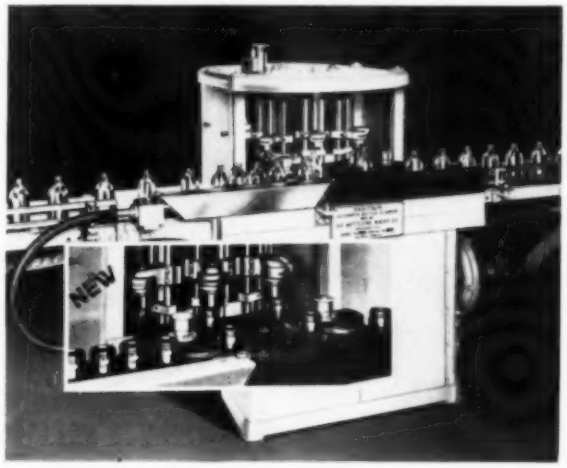
Pres-O permits the loading of both product and propellent through the valve itself, without need of refrigeration. The valve is non-clogging and allows full control of the spray pattern.

Teamed with the Pres-O valve are three attractive new tops which may be had in individualized styling for the given product. Tilt-Top is for foam, shaving creams, whipped cream, etc. and is operated by tilting the package and applying light finger pressure which deflects the spout. Touch-Top, operated by finger pressure on the crest, is for cosmetics, hair lacquers, insecticides, fire extinguishing compounds and paints. Twis-Top, the last of the trio, is adaptable for either spray or foam, is of one-piece construction, with no over-cap. This means speedy fitting and no extra parts to become mislaid. Twis-Top is opened and closed by a mere twist, using finger and thumb. All three tops are available in a variety of colors, which contributes much to package eye appeal. Like the Pres-O valve, they can be used on Crown cans, seamed cans or any other package suitable for pressurized dispensing.

Pres-O claims a record in its use on more than fifteen million packages to date. Further information may be had from the manufacturer, Oil Equipment Laboratories, Elizabeth, New Jersey.

New Automatic Air Cleaner for Wide Mouth Containers

Model DS-8 is the new U. S. Sanitair designed with large heads for handling jars and other wide mouth containers. It is a high-speed automatic air cleaner and its operation is regulated to synchronize with companion equipment in a production line. This new



model has the positive cleaning action, the new automatic safety controls and smooth mechanical operation of all late model U. S. Sanitair Machines. Manufactured by the U. S. Bottlers Machinery Co., 4015, N. Rockwell St., Chicago 18, Illinois.

Ampule Filler-Sealer

Popper & Sons, Inc., 300 4th Avenue, New York City, to meet the increased demand in the pharmaceutical industry for mass handling equipment in processing ampules and vials, are introducing their combination filler-sealer, Model FS-1. This machine, when used in conjunction with their well-introduced Ampule Washer, Model GW-12, permits the user to employ a complete "mass handling system." Ampules can now be handled in gross lots throughout the washing, sterilizing, filling gas flushing, and sealing processes.

The Model, FS-1, is an automatic, high-speed combination Ampule filler and sealer and embodies the mass handling technique. A slow turning, unscrambler table incorporated into the machine, automatically feeds the ampules for subsequent liquid filling, sealing, annealing, and automatic ejection. Steady production rates up to 50 containers per minute are readily attainable. This versatile unit can also automatically feed, fill and deliver vials. For additional information, contact the manufacturer.

These two attractive bottles are available in either clear or frosted glass. They can be supplied plain or with fired-on ceramic labels.

Style 682

Made in 5 sizes—from ⅛ oz. to 4 oz.

Style D62

Made in 9 sizes—from ½ dram to 8 oz.

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 40 W. FORTIETH ST. • Chicago Office: 1572 MERCHANDISE MART

Cartridge Demineralizer

Employing the same proved mono-column demineralizing method (a mixed bed of cation and anion resins in a single column) being widely acclaimed in industrial applications and recently reported by experimenters as effective in the decontamination of water containing mixed fission products, the 1953 Model Penfield Permanent Cartridge Demineralizer, in addition to being an ideal unit for commercial users of reasonable quantities of high-purity water, offers exceptionally interesting possibilities as a standby or shelf unit for emergency us in hospitals, schools, municipal and military defense centers, etc.

Designed to make mineral-free water "as handy as your tap" for laboratories of all kinds, photo-finishers, photo-engravers, users of storage batteries, etc., the Penfield Demineralizer features a Permanent Cartridge, an Electric Purity Indicator, and a exclusive Flow Meter (a Sight Indicator for adjusting intake flow to the optimum rate for most efficient ion exchange action).

Capable of supplying up to 10 gallons per hour of super high purity water, the unit weighs only a few pounds and attaches to any wall near a tap or can be mounted on a new Penfield Laboratory Stand.

All that is then necessary to secure high-purity, demineralized water at will, is to connect the intake hose to the tap, insert the outlet hose in a receptacle, and turn on the faucet.

Requiring no heat, steam or other power for its operation (water pressure does the entire job), the Penfield Demineralizer performs its ion exchange function without muss or fuss (no boil-outs or still odors) and features a Permanent Cartridge design which does away with the need to purchase expensive new cartridge and screens when the resins need replacing. Thus it provides super high purity water at lowest possible operating costs (only a fraction of the costs of distilled water).

With raw water containing 5 grains of solids, one Penfield resin charge furnishes 200-230 gallons of mineral-free water. The Electric Purity Meter that is built into the unit plugs into any AC outlet to provide continuous conductivity information relative to the purity of the treated water, warning when the resin charge in the Permanent Cartridge requires simple dumping and replacing.

However, the Penfield Demineralizer performs its water-purifying function regardless of whether or not the Electric Purity Meter is plugged in and operating. Thus, during an emergency and the possible absence of electric power, all that is necessary is to turn on the faucet to the optimum intake flow rate (as visually indicated by the exclusive Penfield Flow Meter) and keep track of gallonage output so that the resin charge may be replaced at proper gallonage intervals.

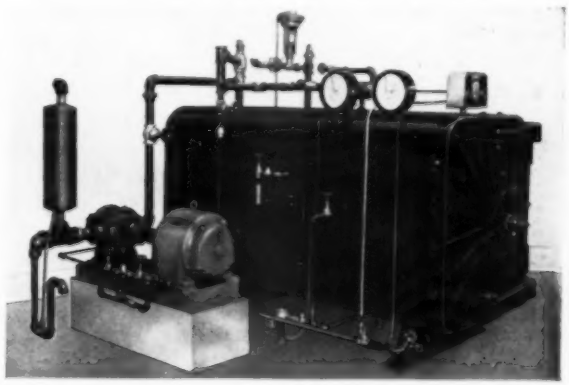
Complete information about the 1953 Model Penfield Permanent Cartridge Demineralizer and new, convenient Laboratory Stand may be secured by writing Mr. Edward H. Clohessy, General Manager, Penfield Manufacturing Co., Inc., 19 High School Avenue, Meriden, Connecticut.

Industrial Sterilizers

A new catalog, issued by American Sterilizer Company, Erie, Pa., describes the latest procedures in the sterilization of pharmaceuticals, packaged food products, surgical dressings and bulk product materials such as wools, synthetic fibres, seeds, tobacco, etc.

Recent developments in drugs and materials which are heat and moisture sensitive have made sterilization by steam or hot air undesirable. America meets these conditions with a cold process which utilizes "Carboxide" gas as the sterilizing agent. Plastic and rubber products, powders, delicate instruments, safety equipment, packaged dry goods and foods, and pharmaceuticals are presently using this American cold process.

To meet a wider application, America has introduced a combination Steam-"Carboxide" Sterilizer. This unit may be operated at 25-27 pounds gas pressure for "Carboxide" sterilization or at 15-17 pounds (250F-254F) for steam sterilization or as a combination unit employing "Carboxide" gas in the chamber and steam in the jacket. The latter method shortens the exposure periods because of the temperature coefficient of the gas and its more rapid diffusion



at higher temperatures. Catalog C-113 includes diagrams, cross section views and concise descriptions, with engineering data to help in the selection of proper sterilizer units for a wide range of bulk or packaged materials for industry. Write American Sterilizer Company, Erie, Pa.

Air-Cooled Heat Exchangers

A 12-page, illustrated bulletin on air-cooled heat exchangers for a wide variety of industrial cooling and condensing applications has been issued by The Fluor Corporation, 2500 So. Atlantic Blvd., Los Angeles 22, California. Known as Fin-Fan Heat Exchangers, the units described are of the forced draft type and are designed to cool liquids or gases at pressures up to 5,000 PSI and temperatures as high as 1,500 degrees F.

These air-cooled units are being installed to replace or augment water-cooled heat exchangers in many plants faced with the necessity of dissipating great heat loads from everyday processes. Copies will be mailed free on request.

Inexpensive "Superplate" Heat Exchanger

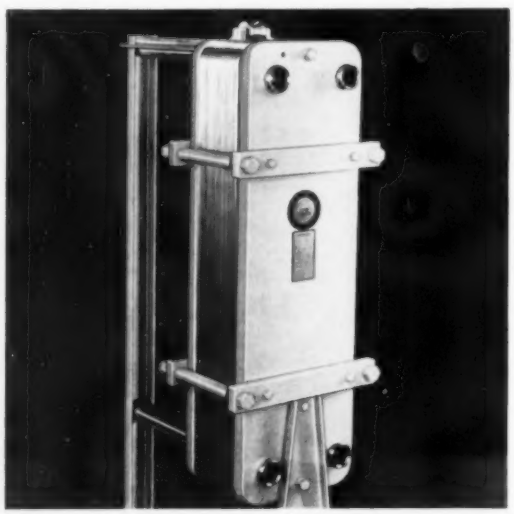
A new, low-capacity, plate type heat exchanger selling for much less than standard models is now available from Cherry-Burrell Corporation. The Model SI-30 "Superplate" Press, as it is called, can be used for the continuous heating or cooling of such products as milk, wine, soup, beverages, oils and many other liquid food and chemical products.

An important feature of this press is the fact that the stainless steel plates used with it are the same as those provided for standard model "Superplate" Presses. Therefore, when the capacity must be increased beyond the limits of this press, *only the press* need be replaced. The plates have a surface of many knobs which create turbulence and thereby provide rapid heat transfer. Each plate is made of stainless steel, stamped out of one piece, with no welds or corners to catch and hold dirt.

Although this model does not have all the refinements and conveniences of the larger models, it does retain the important operating features such as stainless steel product contact surfaces, and its usefulness is in no way impaired. It is particularly recommended for the many heating or cooling applications which will require only infrequent opening of the press.

A maximum of 30 plates can be used with this press when there are no intermediate terminals, and as many as 19 plates when an intermediate terminal is required. Exterior surfaces have a zinc metalized finish further protected by paint. Over-all length is less than 3 feet; height is less than 5 feet.

More information on this new "Superplate Press" can be obtained by writing to Cherry-Burrell Corporation, Dept. AS-3, 427 West Randolph Street, Chicago 6, Illinois.



Skid Racks

American Metal Products Company, 5959 Linsdale Avenue, Detroit 4, Michigan will introduce their new Skid Racks at the 5th Annual Material Handling Exposition.

These racks are made in prefabricated sections that are assembled without any bolting or welding. The only tool needed is a hammer. Made of heavy wall, square tubing they are capable of carrying tremendous loads and they can be tiered to any height desired. Available in standard, heavy duty, or extra heavy duty models. Literature is now available.

New Batching Scale

A new batching scale for measuring pour-off has been added to their line of hydraulic hoist and crane scales by Hydroway Scales, Inc., 20621 W. 8 Mile Road, Detroit 19, Michigan.

The new "Hydroscale" has a reverse reading dial. When a full container is lifted and the pointer takes position, the operator resets the dial so that "0" coincides with the pointer by turning a convenient adjustment control. As the contents are poured off, the pointer retreats, registering directly the amount of decreased weight. No subtraction or computation is necessary. After one pour, the dial may be reset at "0" for the second pour, etc. The dial can be reset to "0" for full 360°.

The scale has wide application in the batching of medium and large quantities of liquids and loose material in the paint, chemical, food, drug, metal casting and other industries. Scales are available at present in 500 and 1000 pound models with 12″ dials. A stand is also available for holding the scale when not in use.

New Permanent Magnet Separator Announced

An addition to its line of electro-magnetic and permanent magnet separators has been announced by F. W. Shrader Company, 5788 W. Washington Blvd., Culver City, California.

The new unit is identified as Type SPD and is specially designed for removing iron from material discharged from the "throw out" of a Raymond Roller Mill.

In many industrial processes in connection with ceramics, foods, chemicals, plastics and minerals it is essential that all traces of ferrous contaminations be removed from finely ground material. It also is advisable to effect removal at the earliest possible stage of material flow.

With the new Shrader SPD separator, purified material may be automatically returned to mill for further grinding or discharged outside. The unit does not require supervision or periodical cleaning and may be adapted to many other applications at different points of material flow.

Other Shrader separators are available to meet virtually all requirements for removing iron from other materials during processing.

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Readers' Questions

Soothing Eye Drops: *We would like an eye drop formula that will be suitable for use in the eyes when wind, dust, sun, smoke or colds have caused irritation. Newton.*

A preparation of this sort has been described by May as being very valuable for general and free use in the various forms of conjunctivitis, which also provides exceedingly grateful relief for washing out the eyes following exposure to wind and dust, after motoring, golfing and similar conditions that cause strain or discomfort. Said to provide superior comfort and cleansing effects, the solution is described as containing:

Sodium bicarbonate	**15 grains**
Sodium biborate	**15 grains**
Sodium chloride	**15 grains**
Glycerine	**1 dr.**
Distilled water	**8 oz.**

Another product, recommended to remove dust, dirt, dried tears and oil secretions from in and about the eyes, contains:

Boric acid	**25.0 parts**
Sodium borate	**30.0 "**
Glycerine	**10.0 "**
Witch hazel water	**50.0 "**
Distilled water, to make	**1000.0 "**

Tooth Paste: *We are encountering difficulties in connection with the preparation of our dental cream. We would appreciate your giving us instructions for the preparation of a tooth paste that will not be too difficult to make. Valencia.*

I think that the following will serve your purpose:

Precipitated chalk, light	**46.0 per cent**
Powdered gum tragacanth	**1.0 " "**
Pulverized neutral white soap	**4.1 " "**
Glycerine	**24.5 " "**
Water	**18.7 " "**
Powdered soluble saccharine	**0.1 " "**
Methyl parahydroxybenzoate	**0.1 " "**
Flavor	**0.5 " "**
Alcohol	**5.0 " "**

Mix alcohol and the gum; add hot water, glycerine, soap, saccharine, preservative and flavor. Mix one-half hour. Mix and sieve the dry ingredients and slowly add them to the liquid. Mix until a smooth white paste is obtained. Mill. The consistency of this paste is slightly heavy. It can be reduced by adding water.

Chlorophyll: *I should like to obtain some information on chlorophyll. First, what are the customary doses of water-soluble chlorophyll for administration by mouth? Second, what is the general concentration used in the so-called chlorophyll chiclets? Third, what types of chlorophyll are used for this purpose? Bogota.*

I cannot give you any information concerning the customary doses for chlorophyll by mouth since this has not been established as yet. As far as I can determine, the quantity of sodium copper chlorophyllin present in the coating of chiclets amounts to 4 milligrams of the chlorophyllin per single chiclet. Sodium copper chlorophyllin is the preparation generally used for this purpose.

Anesthetic Lotion: *We need a local anesthetic for an alcoholic solution containing salicylic acid, benzoic acid and camphor. We want an item that would be acceptable to the Food & Drug Administration. Mechanicsburg.*

It seems to me that benzyl alcohol or chlorobutanol would serve as suitable local anesthetics for your solution. I would suggest, however, that you check for compatibility. Of course, I cannot say whether your resulting product will or will not be acceptable to the Food & Drug Administration.

Suntan Oil with Olive Oil: *I am interested in obtaining a formula for a suntan oil containing olive oil, which as you know, is quite plentiful in our country. Athens.*

I think the following formula for a suntan oil will be satisfactory for your purpose:

Quinine oleate	**3.5 per cent**
Olive oil	**46.0 " "**
Peanut oil refined	**49.5 " "**
Oil of cassia	**0.5 " "**
Perfume oil	**0.5 " "**

Dissolve the quinine oleate in the oils, add the perfume and the other oils. If it is desired a sufficient quantity of pigment brown may be added to this preparation.

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Advancing Therapy

Local Terramycin for Skin Infections

Studies have been made by C. S. Wright and D. N. Tschan (*Arch. Dermal. & Syph.* 67:125, 1953) in which oxytetracycline (Terramycin) ointment was applied topically to 845 patients, 635 of whom were followed through to the completion of therapy. Impetigo contagiosa responded promptly, 82 of 90 patients being cured within 24 hours to seven days. Deeper infections, such as folliculitis and sycoses vulgaris, responded more slowly, but 101 of 106 patients were cured. Oxytetracycline ointment proved efficacious in clearing up secondary impetiginization in cases of contact dermatitis, atopic eczema, dermatophytosis, and seborrheic eczema. In the oxytetracycline treatment of wounds following minor skin surgery, infection did not develop in a single case. In not a single instance did oxytetracycline hydrochloride cause irritation of the skin. In four cases in which irritations occurred, these were proved by patch testing to be due to the petrolatum base. However, viral diseases of the skin and dermatosis other than bacterial infections failed to respond to oxytetracycline applied topically.

Estrogen Lotion for Premature Baldness

In investigations on the treatment of premature baldness made by I. Shapiro (*J. Med. Soc. New Jersey* 50:17, 1953), three men and three women with scalp hair loss and scaling (the duration of which was from three to 100 months) received topical estrogens after other measures had failed. A lotion containing 1 mg. per cc. of conjugated estrogens, expressed as sodium estrone sulfate, in 70 per cent alcohol was applied to the scalp twice or three times daily. Average dose was 4 to 5 mg. per day. Therapy was continued for periods from one to twelve months. All subjects were carefully followed to determine whether systemic effects developed from the locally applied estrogens such as menstrual irregularity, breast swelling, irregular bleeding, changes in libido or body hair or of pigmentation.

Within three to six weeks, alleviation of symptoms and reduced hair loss were noted. Response was prompt and consistent. No systemic effects were noted. On the basis of these findings, Shapiro believes that estrogenic lotions have a definite place in the management of resistant cases of scalp hairfall and scaling.

Silicone Coatings for Gastric Ulcers

The experiments made by M. Nickerson and C. F. Curry (through *Science News Letter* 63:246, 1953) suggest that a protective silicone coating may be useful in the treatment of ulcers. In their study, ulcers were produced artificially in rats and guinea pigs by injecting histamine. Feeding a suspension in water of several kinds of siloxanes, put a tough coating over eroded areas of the stomach and duodenal tract. This afforded almost complete protection against gastric erosion, while control animals died within five days.

Fungus Infection after Antibiotics

A number of reports have called attention to the possibility of fungus infections, particularly those due to *Candida albicans*, following the use of broad spectrum antibiotics such as aureomycin, chloramphenicol and Terramycin. Recently, C. Brown, Jr., S. Propp, R. T. Beebe and L. Early (*J. A. M. A.* 152:206, 1953) presented three cases of fatal fungus infections associated with antibiotic therapy. The evidence from these and other cases suggests that patients who are receiving broad spectrum antibiotics should be carefully observed for evidence of fungus invasion.

Of importance, therefore, is the report of D. C. Mountain and F. P. Krumenacher (*Am. J. Med. Sci.* 225:274, 1953) on the oral administration of undecylenic acid in the prevention of the monilial complications secondary to the use of aureomycin, chloramphenicol and terramycin. They observed that oral administration of this agent apparently prevents such complication in a high proportion of patients to whom it was given prophylactically. In addition, early results suggest that undecylinic acid may be of some value in treating these complications after they have developed. However, undecylinic acid does not prevent the diarrheas which occur secondary to these antibiotics, nor does it inhibit the growth of the *Proteus*, *Pseudomonas*, or hemolytic *Staphylococcus aureus* organisms.

The clinical results obtained by Mountain and Krumenacher do not support the theories that the symptoms of glossitis, pharyngitis, pruritus ani, pruritus vulvae, vaginitis or proctitis are caused by avitaminosis B, fungus sensitivity, or the direct irritative action of the antibiotic.

Procaine Infection for Plantar Warts

E. C. Branson and R. L. Rhea (*New England J. Med.* 248:631, 1953) have found that the intracutaneous injection of plantar warts with one per cent procaine hydrochloride has proved to be a simple and effective treatment, giving 96 per cent relief of symptoms and 73 per cent absolute cure in a series of 48 patients. The treatment is painless and nondisabling and does not require hospitalization, and results compare favorably with those obtained by current methods of excision, radiation and fulguration. It is especially adaptable to cases with multiple warts of mosaic type, in which excision or fulguration would be quite disabling.

Improved Tolerance to Oral Aminophylline

The study made by G. Cronheim, T. T. Justice, Jr. and J. S. King, Jr. (*Postgrad. Med.* 13:432, 1953) provides a new approach to increasing tolerance to oral aminophylline Acute tolerance tests, extended over a period of five days, have shown that when aluminum hydroxide gel is administered with aminophylline the irritating effect of aminophylline on the gastrointestinal tract is greatly reduced; thus, large doses of aminophylline can be tolerated. In combination with aluminum hydroxide gel, aminophylline is well tolerated by most patients in doses varying from 1.0 to 1.6 Gm. (15 to 24 gr.) per day; it has been shown that this amount is

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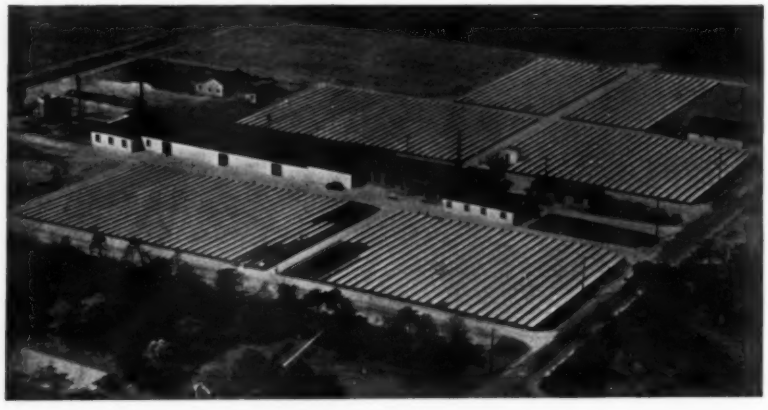

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sufficient to produce a reliable diuretic effect. In many instances, the daily dose of aminophylline. The addition of aluminum hydroxide gel has no effect on the absorption of theophylline from the gastrointestinal tract as indicated by theophylline blood concentration. Therefore it may be possible to give aminophylline by the oral route in amounts sufficient to obtain the cardiac-stimulating effect demonstrated after parenteral administration.

Lozenge to Curb Smoking

W. L. Gould (*GP* 7:53, Feb. 1953) reports that smoking appeal was effectively reduced in 265 of 349 smokers who took medicated lozenges for the purpose of stopping the use of tobacco. Each 5-grain lozenge contains 1/20 grain of benzocaine and was flavored with saccharin, extract of licorice powdered ginger, and oils of anise, wintergreen, peppermint, coriander, and cloves. The recommended method of use is to take a lozenge every time there is a desire to smoke. The average number of lozenges taken by the subjects of this investigation was six daily, but some took as many as fifteen. There were no untoward effects. The safety of the lozenges is emphasized, and it is pointed out that even if 63 lozenges were taken at one time, this would represent 3 grains of benzocaine, whereas the pharmacological dose is 5 to 10 grains. The anti-smoking action of the lozenge is attributed to: (a) its effect upon taste, and the effect of the small amount of benzocaine in the lozenge is to delay the absorption of the flavoring agents and thereby prolong their effect; (b) it satisfies the smoker's desire to have something in his mouth.

Vitamins in Antibody Production

The role of vitamins in antibody production is being investigated by A. E. Axelrod (*Metabolism* 2:1, 1953). To determine the interrelationships between the components of the diet and resistance of susceptibility to infection, he designed animal experiments to study antibody formation in specific vitamin deficiencies. The experiments indicated that certain B vitamins, notably pyridoxine, pantothenic acid and pteroylglutamic acid, play a significant role in antibody synthesis. There is considerable basis for linking pyridoxine to amino acid metabolism, and its participation in antibody production may be related to this function. A corresponding mechanism for the action of pantothenic acid has not yet been demonstrated. A relationship between pantothenic acid and peptide bond formation is suggested by the observation that coenzyme A, a compound that contains pantothenic acid, is involved in the synthesis of hippuric acid.

Considering these data, Axelrod is of the opinion that the ability to control antibody production by regulating the vitamin intake should be a useful tool in the unraveling of the mechanisms of antibody synthesis. Since the antibodies represent a class of specialized proteins, such studies would yield information regarding the processes of protein anabolism in general.

New Drug for Leukemia

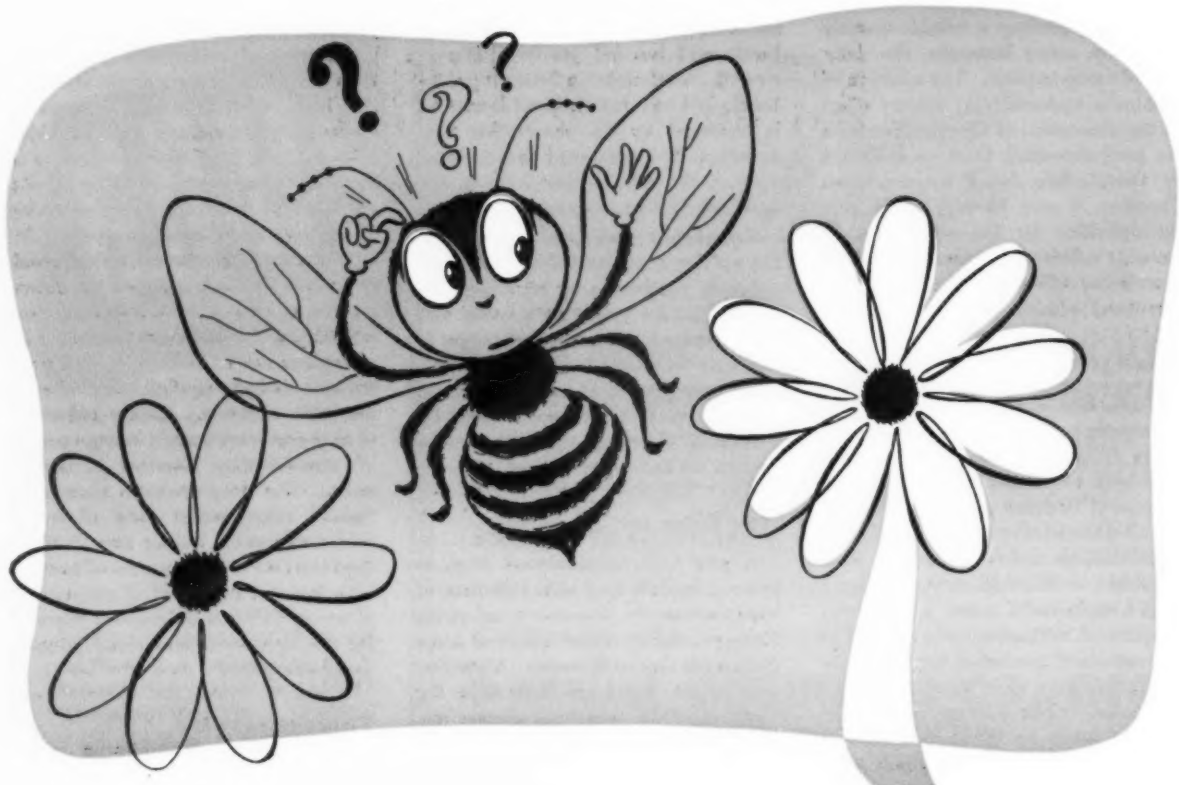
A new orally-administered drug, 6-mercaptopurine, that halts leukemia, at least temporarily, was announced at the Chicago meeting of the American Association for Cancer Research. According to a report in *Science News Letter* for April 18, 1953, 6-mercaptopurine was synthesized by G. H. Hitchings and G. B. Elion of the Wellcome Research Laboratories, Tuckahoe, N. Y. and was tested clinically by J. H. Burchenol, D. A. Karnofsky, M. L. Murphy, R. R. Ellison and C. P. Rhoades. To date, more than 100 patients have been given the new drug. Of 45 children with acute leukemia, 14 showed temporary disappearance of the disease for one to six months. Another 11 were substantially improved although the disease could still be detected by laboratory methods. Of these 25 children, 11 had previously been treated with one of the antifolic drugs, and had either been resistant to these drugs in the beginning or became so during treatment. Of 18 adults with acute leukemia, three obtained complete though temporary regression of the disease from the new drug.

Warfarin Derivative as Anticoagulant

In an exhibit at the 102nd annual meeting of the American Medical Association, S. Shapiro and K. P. Link presented data on a new anticoagulant, Warfarin Sodium Derivative, an intravenous long-acting 4-hydroxy coumarin. Based on studies in animals and man, the drug has been found to exhibit the following characteristics: (1) It is 75,000 times as soluble in water as bishydroxycoumarin; (2) it can be given intravenously; (3) it requires relatively small doses to attain therapeutic hypoprothrombinemia; (4) it induces initial prolongation of prothrombin time earlier than bishydroxycoumarin; (5) it has a low index of hemorrhage from overdosage; (6) it produces no toxic side-effects; (7) it is of high potency as a hypoprothrombinemia-inducing agent; (8) it yields a smooth extended curve of hypoprothrombinemia (expressed in prolongation of prothrombin time), and (9) it is readily counteracted by water-soluble vitamin K or K_1. Intravenous administration eliminates variability in absorption from the intestine and contributes to high predictability of prothrombin response. Earlier induction of hypoprothrombinemia reduces period of heparinization required in urgent cases. The drug produces plateau at "peak" (therapeutic) level of hypoprothrombinemia lasting two to three days thus permitting control of therapy with lessened frequency of estimations of prothrombin time presently required for the hypoprothrombinemia-inducing drugs now in use.

Thiocyanate for Hypertensive Headache

H. Saint-Pierre, A. C. Corcoran, R. D. Taylor and H. P. Dustan (*J. A. M. A.* 152:493, 1953) report that 17 intravenous injections of a sodium thiocyanate solution containing 1 Gm. of thiocyanate ion were given to 15 hypertensive patients because of headaches that were refractory to other methods of treatment. Gratifying and rapid relief was experienced by three-quarters of the group. The incidence and degree of relief approximated those observed during oral treatment with thiocyanate, but the onset of relief occurred within hours rather than days. The dose used yields predictable serum concentrations (6 to 7 mg. per 100 ml. in an adult weighing 60 kg.), so that chemical determinations after single or widely spaced injections are unnecessary. These concentrations are much less than those considered toxic; correspondingly no toxic reactions were observed in this series. Repeated injections demand chemical control of serum concentration. The mechanism of relief is obscure; it does not depend on decreased arterial pressure, and it is probably related to the sedative action of the ion. This experience leads to the suggestions that intravenous injection of thiocyanate be tested in impending migraine and in the initiation of oral treatment of hypertension with thiocyanate.



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Industry's Books

Soap, Perfumery & Cosmetics, Year Book and Buyer's Guide (1953), edited by F. V. Wells, editor of Soap, Perfumery and Cosmetics, 304 pp., 8" x 11", United Trade Press Ltd., London, Cloth 1-10-0.

This well known compendium of technical and commercial information for the Soap, Perfumery, Pharmaceutical, Cosmetic and Allied Industries is now in its 10th Revised Edition for 1953. The Buyer's Guide Section has been revised and enlarged and now presents a comprehensive directory for all sources of supply. Feature articles include: The British Perfumery and Cosmetic Industry. Recent Progress in Cosmetics. Determination of Alcohol in Wines and Liqueurs. Essential Oils: Standard Packages. Castor Oil, Alcohol and Water Miscibility. Laboratory Information Section. Cosmetic Formulation. Standards and Specifications Section. Marketing and Export Section. Trade Associations, Societies, Governmental Organizations, etc. Although this book is primarily intended for chemists and buyers in the United Kingdom, at least a third of the volume will prove useful to readers overseas.

Pharmacology and Therapeutics, by Charles Solomon, M.D., F.A.C.P., Lecturer in Medicine, State University, College of Medicine, New York, with the collaboration of Elizabeth S. Gill, B.S., R.N., Instructor in Nursing, Department of Nursing, Columbia University, 656 pp., Illus., Sixth Ed., (1952), J. P. Lippincott Co., Phila., Cloth, $4.50.

Brought in accord with the U.S.P. XIV, N.F. IX and N.N.R. 1952 this edition presents the newer drugs and brings up to date previously discussed drugs which have been re-evaluated and for which new findings are reported. Among the drugs added to this edition are penicillin, streptomycin, bacitracin, aureomycin, chloramphenicol, cortisone and ACTH, curare and its derivatives and radioactive isotopes. The close relationship between pharmacology and clinical medicine is again stressed in this edition with renewed emphasis on the applications of prime importance to the nurse.

Radioisotopes in Industry, Edited by John R. Bradford, Director, Radioisotopes Laboratory, Case Institute of Technology, 309 pp., Book Div., Reinhold Publishing Corp., New York (1953), Cloth $8.

Based on a series of lectures presented at Case Institute of Technology, this book covers all of the important industrial uses of radioactive isotopes. Accompanied by a wealth of halftones, tables and graphs, Bradford's book covers not only the many uses of radioisotopes, but also such important related topics as laboratory construction, shielding, personnel protection, handling techniques and radioactive waste disposal. Also of special interest is the chapter on the recently developed industrial uses of gross fission products prepared by a group of collaborators at Stanford Research Institute. This book is written with a minimum of mathematical treatment, and can be used profitably by those without extensive chemical or engineering training.

Dermatology, Essentials of Diagnosis and Treatment, by Marion B. Sulzberger, M.D., Professor and Chairman, Department of Dermatology and Syphilogy, New York University Post-Graduate Medical School, and Jack Wolf, M.D., Associate Professor of Clinical Dermatology and Syphilology, New York University Post-Graduate Medical School, The Year Book Publishers, Inc., Chicago, 592 pp., Illus., Cloth, $10.

It is just a little over three years ago that the third edition of this text appeared under the title Dermatologic Therapy. A continued demand for this work, and certain tremendous advances in therapy in this specialty, have combined to make necessary this completely revised text. This book is still primarily intended to introduce to the medical student, the postgraduate and graduate student in dermatology and the practicing nondermatologist the practical steps in diagnosing and managing selected common and important dermatoses and venereal diseases. Contents: Chapters I — General Dermatologic Management. II—Eczematous Dermatoses. III—Urticaria—Giant Hives. IV—Atopic Dermatitis. V—Dermatoses Due to Fungi. VI—Acne Vulgaris and Other Acneform Dermatoses. VII—Pyodermas. VIII—Sulfonamides; Calciferol; Cortisone-ACTH. IX—Psoriasis and Seborrheic Dermatitis. X—Bullous and Vesicular Dermatoses. XI—Zoonoses (Diseases Due to Animal Parasites). XII—Common Tumors of the Skin. XIII—Miscellaneous Dermatoses. XIV—Drug Eruptions. XV—Miscellaneous Skin Disorders. XVI—Early Syphilis. XVII—Other Forms of Syphilis. Index.

Organic Reactions Volume VII, Editor-in-Chief Roger Adams, 440 pp., John Wiley & Sons, Inc., New York, (1953), Cloth, $9.

This is the seventh volume of a series which was started in 1942. The intention is to provide a compilation of all the important synthetic chemical reactions. To make these volumes authoritative as well as complete, each chapter is written by a man or men who have had special experience with the reaction they are writing about. Each chapter in the series provides a comprehensive survey of a particular reaction and includes a general discussion of method, modifications, examples of applicability, special precautions, a detailed description of the procedure, expected yields, and other pertinent data. Tables have been compiled and are included in each chapter, listing compounds which have been prepared by or subjected to the reaction under discussion in that chapter. Contents: The Perchmann Reaction — Suresh Sethna an Ragini Phadke. The Skraup Synthesis of Quinolines—Richard H. F. Manske and Marshall Kulka. Carbon-Carbon Alkylations with Amines and Ammonium Salts—James H. Brewster and Ernest L. Eliel. The von Braun Cyanogen Bromide Reaction—Howard A. Hageman. Hydrogenolysis of Benzyl Groups Attached to Oxygen, Nitrogen, or Sulfur—Walter H. Hartung and Robert Simonoff. The Nitrosation of Aliphatic Carbon Atoms—Oscar Touster. Epoxidation and Hydroxylation of Ethylenic Compounds with Organic Peracids—Daniel Swern.

Compounder's Corner

Isopropyl Myristate in Cosmetics

In a comprehensive discussion, G. S. Pears (*Perf. & Essent. Oil Rec.* 44:84, 1953) states that the introduction of the fatty acid esters of the low molecular weight alcohols, such as butyl stearate, isopropyl palmitate, and isopropyl myristate, is causing an evolution in basic cosmetic formulation. Of these esters, isopropyl myristate is probably the most important. Isopropyl myristate of cosmetic grade is a clear, colorless and virtually odorless mobile liquid, consisting mainly of the isopropyl ester of myristic acid and lesser amounts of the corresponding esters of lauric and palmitic acids. To some extent its constitution, and consequently certain characteristics, vary according to origin. This ester is completely miscible with mineral and vegetable oils, fats, waxes and fatty alcohols, insoluble in water, glycerine, carbitol and sorbitol, and exhibits a limited solubility in aqueous ethyl alcohol.

In considering the characteristics of isopropyl myristate as they relate to formulation, Pears observes that the very faint characteristic odor of this material presents no difficulties in the perfuming of products. Prepared from a saturated fatty acid this ester is perfectly stable, particularly against hydrolysis, and can be safely used in the presence of pigments or other materials which are potential oxidation catalysts. This point makes it markedly superior to the natural oils which are prone to rancidity.

In considering skin penetration, it is noted that compatibility with the natural secretions of the skin, coupled with low viscosity and general similarity to the common lipoids result in a fairly high degree of skin absorption, imparting an emollient but non-greasy feel on the skin. Sheen or lustre is produced without the accompanying greasiness usually associated with the vegetable oils or hydrocarbons. The extensive range of compatibility automatically indicates a potential blending action, which can be used to advantage in formulations where exudation and separation is experienced due to an incompatible admixture of mineral and vegetable oils. From the toxicological viewpoint, isopropyl myristate appears to be dermatologically innocuous. It is said to be nonirritant even to abraded skin and there is no evidence of sensitizing properties.

Pears calls particular attention to the thixotropic properties of isopropyl myristate. On admixture with most vegetable or hydrocarbon waxes, especially those of microcrystalline structure similar to Carnauba wax, a thixotropic gel results. This effect is shown by a breakdown or liquefaction of the gel under slight pressure of the fingers or rubbing on the skin, and reversion of the gel form on removal of the pressure and remaining unaffected by normal temperatures.

Consideration of these properties indicates the potentialities of this material in cosmetic products. For example, in the formulation of powder make-up preparations, isopropyl myristate has undoubtedly been a prime factor in the appreciation of thixotropy and its applications, resulting in the introduction of many non-aqueous water-proof preparations of high covering power which are stable and eliminate the unpleasant greasiness associated with high concentrations of vegetables or mineral oils. Its use in the preparation of powder creams and sticks is indicated in the following formulas:

	Powder Cream	*Powder Stick*
Isopropyl myristate	34.0	30.0
Light mineral oil	5.0	5.0
Lanolin	3.0	3.0
Cetyl alcohol	2.0	2.0
Ozokerite	16.0	10.0
Pigmented Powder	40.0	50.0
Pigmented Powder:—		
Kaolin 30 }		
Talc 30 } Pigmented to shade		
Titanium dioxide 40 }		

Although ozokerite is indicated in the experimental formulations, this can be replaced by a suitable amount of Carnauba wax or a blend of waxes.

Isopropyl myristate will advantageously replace all or part of the vegetable or mineral oil in lipstick formulations. The inclusion of 10 per cent will cut the viscosity and reduce the characteristic greasiness of the heavier natural oils and fats in the mass, decreasing drag without detriment to the lustre of the application. Such advantages can also be applied to lip preparations of the anti-chap type which are mainly of a lubricating and emollient character. The place of the compound in lipstick formulation is indicated in the following experimental formula:

Beeswax	**15 parts**
Ozokerite	**10 "**
Carnauba wax	**5 "**
Ceresin wax	**4 "**
Lanolin	**5 "**
Lanolin absorption base	**14 "**
Isopropyl myristate	**10 "**
Diethyl sebacate	**10 "**
Castor oil	**15 "**
Eosin	**2 "**
Color	**10 "**
Antioxidant	**sufficient**
Perfume	**sufficient**

Isopropyl myristate is eminently suitable for use in water-in-oil emulsions and non-aqueous preparations. It is emollient in character, and by virtue of its ability to penetrate the skin, can be used as a vehicle for any soluble active constituent, suggesting its use in hormone creams. Thixotropic action is again evident and the undesirable greasiness, which has been a characteristic disadvantage of such preparations, is considerably reduced or eliminated. The following formulations indicate the manner in which these properties may be utilized:

Day Cream

Stearic acid	**17.00 parts**
Di-glycol stearate	**3.00 "**
Cetyl/stearyl alcohol	**1.00 "**
Lanolin	**2.00 "**
Isopropyl myristate	**5.00 "**
Triethanolamine	**1.00 "**
Sodium hydroxide	**0.25 "**
Glycol or glycerine	**8.00 "**
Water	**62.75 "**
Preservative	**sufficient**

Hand Cream

Stearic acid	**5.0 parts**
Oleic acid	**1.5 "**
Cetyl alcohol	**0.5 "**
Lanolin	**1.0 "**
Almond oil	**5.0 "**
Isopropyl myristate	**10.0 "**
Triethanolamine	**1.2 "**
Glycerine or glycol	**5.0 "**

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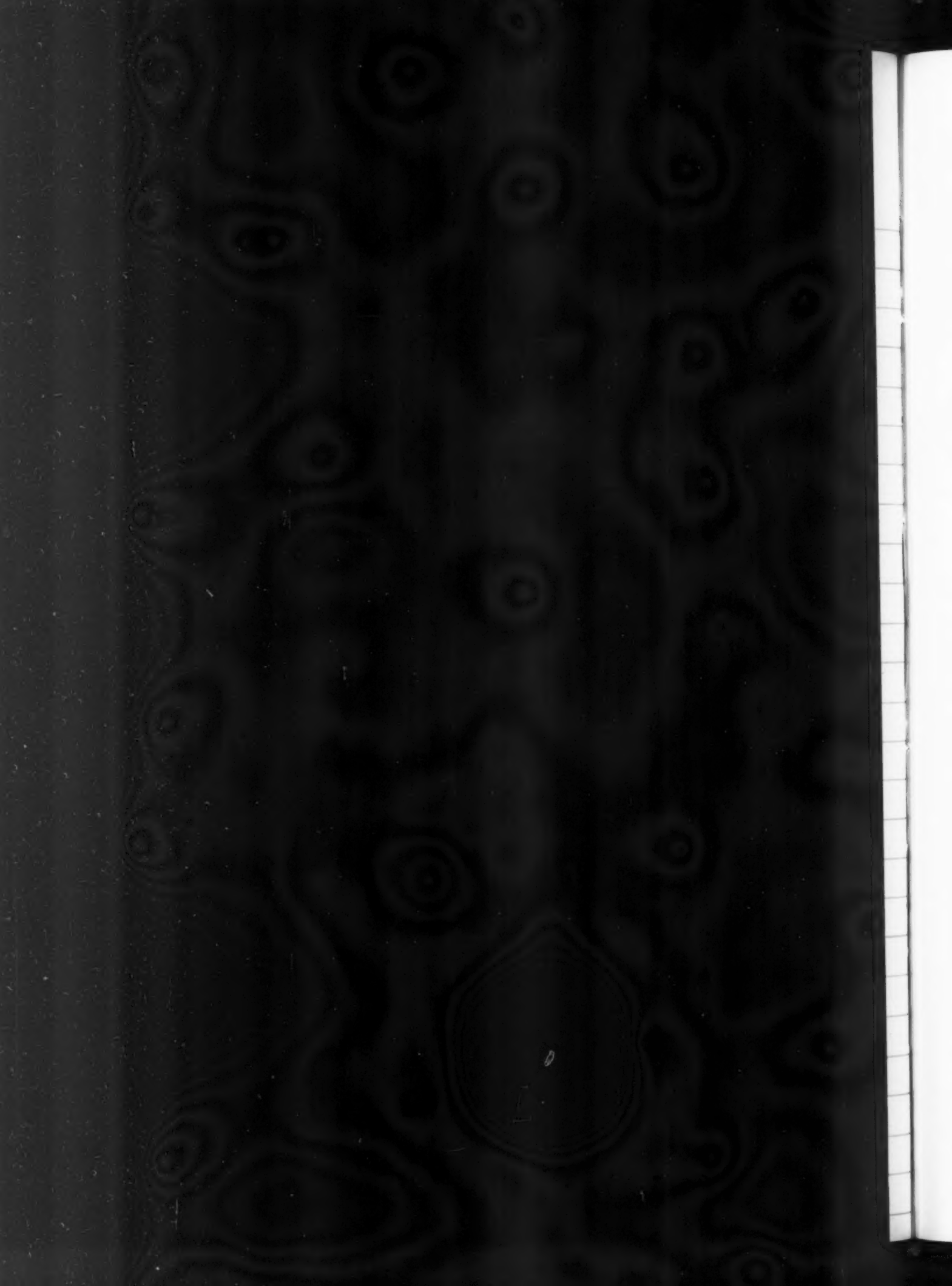

Water	**70.8 parts**
Preservative	**Sufficient**

Cold creams and cleansing creams may also benefit from the use of isopropyl myristate. According to Pears, the ester is very suitable for making suntan creams. It forms an emollient protective film and acts as a vehicle for the ultra-violet screening agents, pigments and added emollients. The following formulation indicates the proportion of incorporation in a sunburn preventive cream:

Glyceryl monostearate (Self Emulsifying)	**14.04 parts**
Isopropyl myristate	**25.22 "**
Lanolin	**5.08 "**
Propylene glycol	**5.08 "**
Titanium dioxide	**2.70 "**
Iron oxide pigment	**2.16 "**
Methyl p-aminobenzoate	**2.15 "**
Methyl p-hydroxybenzoate	**0.16 "**
Water	**43.41 "**

The properties of isopropyl myristate make it a very useful material in the formulation of hair preparations where lubrication, wetting action and fixative action are potential features to be obtained without the greasiness characteristic of the natural oils or the undesirable flaking of gums, making it a valuable ingredient for creams, pomades, brilliantines and sprays. Its ease of emulsification assists in the ultimate removal of such dressings from the hair by shampoos, and in this latter product it can be usefully employed as a lubricating medium especially in the liquid or emulsified types. It is an excellent solvent for cholesterol and other additives to hair preparations and consequently is a useful medium in alcoholic frictions, tonics and lotions.

Isopropyl myristate may be used as a base for perfumed bath oils and emulsified bath preparations. It is also suitable as an ingredient of solid perfumes. Many such products are based on a soap gel incorporating alcohol, and the inclusion of isopropyl myristate tends to clarify the product, permits smoother application, acts as a vehicle and prolongs the staying power of the perfume. The following formula for a solid Eau de Cologne serves as a basis for further experiment:

Sodium stearate	**8 parts**
Isopropyl myristate	**10 "**
Glycerine	**3 "**
Cologne perfume oil	**3 "**
Ethyl alcohol	**76 "**

Absorbable Base for Medical Powders

The preparation of a therapeutically inert absorbable base for medical powders has been described by M. Andersen and V. Wurtzen (*Dansh. Tidsskr. Farm.* 27:25, 1953). In their procedure a starch derivative dusting powder to replace talc is prepared from corn starch by etherification of 100 Gm. of starch dissolved in 20 Gm. of absolute ethyl alcohol containing 5 Gm. potassium hydroxide and 5 Gm. of epichlorohydrin, at 40° C. for two hours. Two per cent of magnesium oxide is added to the finished product. This preparation can be boiled with water for 20 minutes without swelling. If subjected to sterilization, no loss in the dusting and lubricating properties occurs.

Non-Oxidizing Hair Dyes

According to a note in *Soap, Perfumery and Cosmetics* (26:473, 1953), British patent 687,227, granted to Lever Bros. and Unilever, Ltd. describes a process for dyeing the hair by treatment, at moderately elevated temperatures, with an aqueous suspension of synthetic organic dyestuffs which do not oxidize on exposure to air and which are soluble in acetone or ethylacetate. A number of dyestuffs have been found suitable for this purpose, particularly the aminoanthraquinones, alkyl aminoanthraquinones, azo dyestuffs containing a nitro and/or alkanol group and nitro-dyestuffs. The shade of the hair which will result can be accurately judged from the color of the suspension and small color adjustments can easily be carried out by adding further dyestuff to the suspension. The new process can also be used for dyeing hair which has recently been decolorized, since there is no danger of a shade resulting which is darker than that intended.

Another advantage claimed for the new method is that the dyeing process may be carried out by means of a non-alkaline medium. It is suggested to use suspensions having a *p*H of less than 8 and preferably not more than 7. Heat should be applied to the hair simultaneously with, or subsequent to, the application of the dyestuff suspension, to fix the dye firmly to the hair, thus obtaining fastness to washing, perspiration and light. If it is desired to work with a more viscous liquid than one resulting from suspending dyestuffs in water, it is possible to incorporate in the suspension a thickening agent, like ammonium polyacrylate, which will not interfere with the dyeing process. In general, it is suggested to use suspensions in which the concentration of dyestuff lies between 1 and 5 per cent by weight of the suspension. The temperature to be applied ranges from about 40° C. to about 55° C. The higher the temperature the deeper is the color of the hair obtained.

Sonic Tests for Permanents

According to a note in *Science News Letter* for June 6, 1953, D. H. Powers has found that sound waves are a new aid to safe and successful permanent waving. In a talk at a sectional meeting of the American Chemical Society in Summit, N. J., he stated that the technique involves determining the quality of hair by measuring the speed of sound traveling along a hair while it is stretched under increasing loads.

According to Powers, this sound wave technique appears to be the only accurate method of measuring true hair elasticity before and after waving and can be applied to hair on the head. While waving and proper neutralization show some hair damage, the use of the sonic or sound-wave technique allows a study, for the first time, of just what damage or softening occurs and how much rebuilding is achieved by proper and improper neutralizations.

Silicone Dentifrices

British patent 686,429, granted to Dow-Corning, Ltd, describes new dentifrices containing an organopolysiloxane. It is noted that up to now, dentifrices have been used mainly for their cleansing and antiseptic properties and for masking unpleasant breath. The new dentifrices, however, are claimed to aid in preventing the adhesion of or facilitating the removal of tars, stains and food particles from the teeth and to render the teeth non-adherent to such particles. By incorporating an organopolysiloxane in a dentifrice of the liquid, paste or powdered type and by brushing the teeth with such a dentifrice a thin film of organopolysiloxane is deposited on the teeth, rendering them relatively non-adherent to foreign materials. The organopolysiloxanes can be added in 0.5 to 45 per cent by weight to the other ingredients of a dentifrice containing an abrasive, a non-toxic detergent, an inert diluent, a non-toxic emulsifying agent and water. The proportion of the various ingredients depends on whether a liquid, paste or powdered dentifrice is desired.

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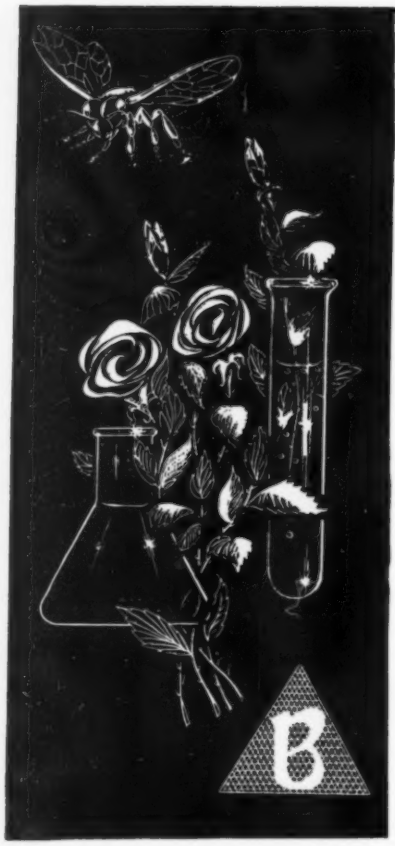

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COSMETIC RAW MATERIAL HEADQUARTERS

Patent Thoughts and Trends

*by Thomas Cifelli, Jr.**
PATENT ATTORNEY

PATENTS VS. SECRECY

It is doubtful whether there is a more frequently-occurring question in the realm of patents than: "should I practice this invention as a trade secret or should I get a patent on it?"

Indeed, as this is written the question of patents v. secrecy has even reached the status of being newsworthy. THE NEW YORK TIMES devoted on June 22, 1953, practically an entire column to the testimony of one, Jess M. Ritchie, manufacturer of AD-X2, before a Committee of the U. S. Senate. For those who may not as yet have become familiar with AD-X2, this is the designation for a battery additive which is claimed by its manufacturer to extend the life of storage batteries. The U. S. Bureau of Standards, after tests, called the additive of "no value." Indeed, it appears that a former bureau director asserted in a letter that putting water into a battery would have the same effect as using AD-X2.

According to the press account of Mr. Ritchie's testimony before the Senate Committee for Small Business, Mr. Ritchie prefers to work from a secret formula rather than seek a patent. Apparently, this decision is based on Mr. Ritchie's belief that his additive would defy chemical analysis for a long time.

The AD-X2 matter became a cause celebre when the present director of the Bureau of Standards, Dr. Allen V. Astin, was dismissed by his superior, Secretary of Commerce Weeks. Dr. Astin has been temporarily re-instated, which is his present status, so far as is known.

The interest here is not whether the Bureau of Standards is right or whether Mr. Ritchie is right. Our present interest in this case lies in the fact that it does illustrate a notable example involving the basic question of trade secrecy against patents.

There is something to be said for both methods of trying to protect an invention. No simple, all-inclusive answer can be given to the question. There are times when maintaining secrecy appears to be the wiser course. There are of course times when seeking patent protection is the preferred course.

The pros and cons of both methods will be touched upon briefly in what follows.

If you really can maintain a trade secret, this is by far the better course to pursue from your own immediate economic standpoint. The trouble however with this solution comes when you try to put it into practice. As soon as you make and sell an article the purchaser has the right to analyze the article and, if it is not patented, to make and sell it himself. If the key to your secret lies in the method of making the article or in the fact that you believe that the article will defy analysis, your chances of marketing the article via the trade secret route appear to be good. However, unless you yourself are the only one who knows all of the secrets there is grave danger that the information will leak out, one way or another. While it is true that the law will protect you against a breach of confidence, the law will not protect you against someone else hitting upon the idea independently. It may be impossible to prove a breach of confidence, even though you may have reason to suspect that the other party really got his information as a result of a breach of confidence.

Then again, the ingenuity of scientists should not be under-estimated. Thus, while it may appear that as far as present knowledge is concerned your product may defy analysis, successful analysis tomorrow may be a relatively simple matter.

There are other considerations involved but it is believed correct to say that operating as a trade secret will benefit you only if and so long as you and perhaps one or two others are aware of the secret and it is of such a nature as to render successful analysis highly improbable.

The chief advantage of a patent is that the law will protect you in excluding all others from practicing your invention for the stated period, in the U. S. A. the period being 17 years. You will be protected even though someone else without knowledge of your patent hits upon the same invention after you do.

The chief disadvantages of a patent are the costs and uncertainty during the period in which you are prosecuting your patent application before the Patent Office and during the period that you may have to suppress infringements of your patent rights before the courts.

Having in mind the foregoing consideration and others, such as the appreciable turnover of technical personnel, it appears that the patent route is the better one, whether we like it or not, generally speaking.

Odorless Soap

A Chilean inventor, Klaus Appuhn, recently succeeded in obtaining a patent (U. S. 2,640,840) on a process for making odorless soap from low grade oils and fats.

Appuhn points out that soaps made from animal and vegetable oils and fats having unsaturated components tend to have a very soft and slimy consistency and undergo oxidation rapidly, becoming rancid. Methods for overcoming these defects involve transforming the unsaturated components into saturated substances. The two procedures used for this purpose are hydrogenation and the Varrentrapp reaction.

The Varrentrapp reaction involves heating oleic acid at high temperature with an excess of alkali, palmitic acid soap forming along with sodium acetate and hydrogen, the reaction being as follows:

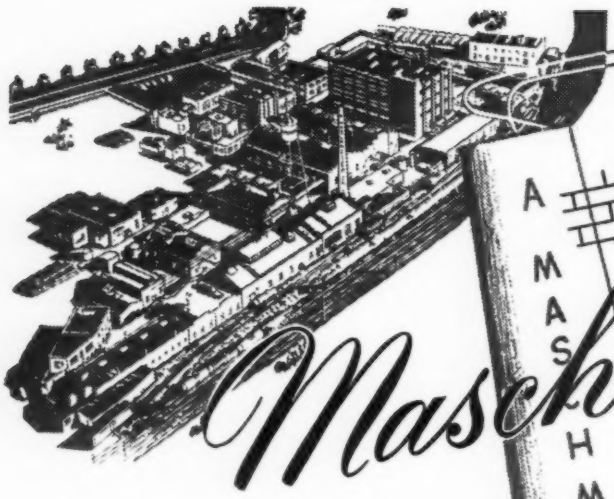
$$C_{17}H_{33}COOH + 2NaOH =$$

Oleic acid

$$C_{15}H_{31}COONa + CHCOONa + H$$

Sodium palmitate

*Gaylor, Cifelli & Jurick
Newark, New Jersey



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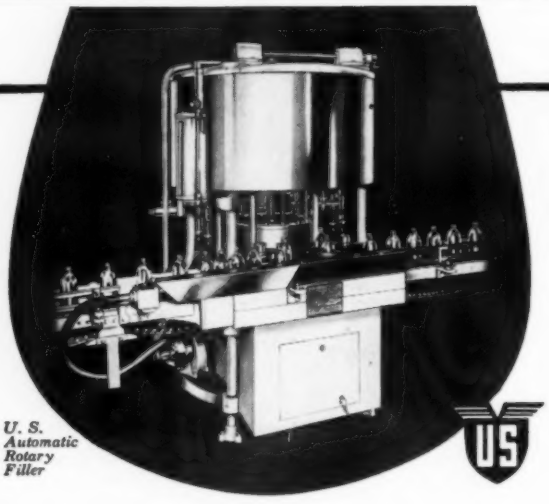

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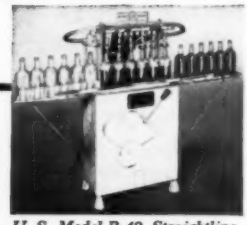

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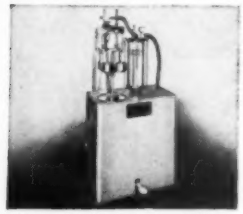

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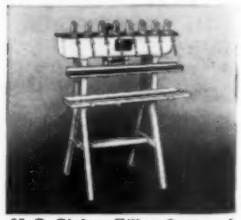

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The patent contains a review of the efforts of others who have attempted to employ the Varrentrapp reaction for industrial purposes. The review follows:

The trials made by Oliver and Radisson in treating by batches 1.5 tons of oleic acid with concentrated lye at approximately 300° C. wherein, by splitting the soap produced they obtained palmitic acid of a light brown color. In order to avoid the danger of decomposition from overheating and to maintain the mass of reactants in a liquid state, paraffin was added to the reacting mass (Chem. Industrie 1883, 170).

According to the "Persapol" method, Stiepel treated water containing soaps made from malodorous fish oils with steam in an autoclave at a temperature above 200° C. until the steam issued from the autoclave in an odorless condition, which happened when the transformation of the unsaturated fatty acids had taken place with the liberation of hydrogen (British patent, No. 145,502). This "Persapol" method in a sense embodies the Varrentrapp reaction combined with the mechanical deodorization with direct steam. By treatment in an autoclave at 250° C. for six hours a decrease of the iodine number from 118.6 to 80-84 was obtained in transforming the fatty acids of whale oil into soap, while at 200° C., the decrease of the iodine number was only 96-103.

Schrauth also studied the Varrentrapp reaction and demonstrated that it is possible to obtain saturated fatty acids by heating unsaturated fatty acids with concentrated lye in an autoclave and obtained caprinic acid and probably also some lauric acid after starting with clupanodonic acid, which acid and its homologs, as is well known, give rise to the characteristic fishy smell of whale oil (Fette and Seifen 1943, 85).

In a process of Henkel & Co. (British Patent No. 172, 250) a hot whale oil soap containing approximately 60 per cent fatty acid and having an iodine number of 130 was pressed through a heated tube at 220° C. and resulted in decreasing the iodine number to 110-115; then it was pressed through another heated tube at 300° C., thus achieving a greater decrease of the iodine number to 90. When, in addition, five per cent of a concentrated lye of 40° Bé. was added with pressure, it was possible to reduce the iodine number to 80. The pressure inside the tube reached 70 atmospheres, and with such treatment an odorless, light-colored soap resulted.

In United States Patent No. 2,027,936 (Schrauth) there is disclosed a method of making soap by heating in an autoclave at 200-280° C. sperm oil with an excess of concentrated soda lye. In this manner a transformation of the fatty acid of sperm oil into alkali salts of fatty acids is obtained, together with a complete deodorization. In effect, this process embodies a modification of the Varrentrapp reaction although said reaction is not specifically mentioned.

United States Patents Nos. 2,393,421 and 2,492,940 (Schmidt and Edwards) relate to processes for making soap from raw sperm oil and anhydrous alkali employing a predetermined excess of alkali sufficient to saponify the fatty acids and transform the fatty alcohols into soap in a single operation. Here again is an example of a variation of the Varrentrapp reaction without said reaction being expressly mentioned.

Appuhn has modified the Varrentrapp reaction by reacting fatty acids of malodorous oils and fats with molten alkali in the absence of water at a temperature of about 300° C. at atmospheric pressure or at slight superatmospheric pressure. Because the neutralization reaction is so violent and considerable foaming takes place, Appuhn uses what he calls a moderator for the reaction. Specifically, he employs 40 per cent of sperm oil in the mixture for this purpose.

The procedure employed by Appuhn and the advantages claimed by him are stated in the patent to be as follows:

A mixture of malodorous fatty acids and sperm oil at a temperature slightly above the melting point and molten alkali are charged simultaneously and continuously in predetermined proportions to a specially constructed saponifier where they react at a temperature of about 300° C. The reaction between the fatty matter and the alkali takes place simultaneously and results in complete saponification with the liberation of hydrogen. The apparatus which I employ may be of the type disclosed in United States Patent No. 2,492,940 or any other apparatus operating on substantially the same principle wherein the resultant soap is discharged from the saponifier in a continuous manner by passing through an automatic outlet in substantially the same quantity as the reactants are charged to the saponifier. The hydrogen liberated during the reaction is collected in a manner to maintain a slight superatmospheric pressure within the apparatus, say of not more than 20 cm. of water in order to prevent the entrance of air thereinto. Within the saponification apparatus both exothermic and endothermic reactions take place and, as the heat produced is greater than that consumed, there is a slight excess of heat. In practice it has been found that this slight excess of heat is substantially equal to the heat lost by radiation and hence it is quite simple to maintain a completely uniform temperature within the apparatus with the aid of a small fuel burner in which the consumption of fuel is insignificant. Thus it is possible to obtain an odorless soap of excellent quality in a continuous manner.

The advantages of my process over those previously employed in the making of odorless soap from malodorous fat and oils may be summarized as follows:

(*a*) No previous refining or hydrogenation of the fats and oils is required.

(*b*) The present method does not involve a special treatment of a previously prepared soap, but on the contrary involves the simultaneous saponification and deodorization of fats and oils which may be carried out in a continuous process following the teachings of Patent No. 2,492,940.

(*c*) The process does not require an autoclave or the generation of high pressures in order to obtain the desired results.

(*d*) The process does not require the addition of any fusing agents which are inert during saponification and which would have to be eliminated later.

Rheumatoid Arthritis Remedy

Schock and Tabern, two Abbott inventors, have come up with U. S. Patent 2,641,609 on a new therapeutic compound which the inventors state has shown indication of being an antiarthritic agent, particularly in the treatment of rheumatoid arthritis.

The compound in question is 2,3,5-trihydroxybenzoic acid. Derivatives of this compound which are said to be effective include the triacyl esters having acyl groups containing up to and including four carbon atoms, and salts of the acid and its esters.

It is pointed out that arthritis, and particularly rheumatoid arthritis, is one of the most painful and most insurmountable afflictions facing mankind. A multitude of chemical compounds were prepared and tested for their effectiveness. The medical profession has postulated that arthritis may be caused by the presence of large concentrations of enzyme hyaluronidase in the joints of the human body.

(*Continued on Page 94*)

Patent Thoughts and Trends

(Continued from page 93)

In the words of the inventors:

Hyaluronic acid is a mucopolsyaccharide acid which in animal joints seems to hold water in interstitial spaces. It is also believed to be essential in holding cells together. This phenomenon is believed due to gel formation by the acid which serves as a cement-like material. It is believed to serve as a lubricant and shock absorber in animal joints. This acid is also believed to play a part in preventing bacterial infection. Thus, it can be seen that hyaluronic acid is a very important chemical to the human body. Without it, the functions of parts of the body would not be performed properly. Therefore, any force which will decrease the quantity or decrease the aggregation of hyaluronic acid, becomes of importance to the medical profession. Hyaluronidase is an enzyme which deaggregates and depolymerizes hyaluronic acid. It is believed that the deaggregation is effected by eliminating secondary bonds between polysaccharide molecules or between protein and polysaccharide molecules. Thus it is important to inhibit the action of hyaluronidase and permit the hyaluronic acid to perform its functions in the body unimpaired. This enzyme is found in various parts of the human body and while the chemical structure of the enzyme and hyaluronic acid is unknown, there are several methods of analysis available for determining the amounts of these compounds. For methods of analysis and for a review article of the nature of these substances, see the article by Meyer in Physiological Reviews, vol. 27, pages 335-357 (July 1947).

The inventors state that the preparation of 2,3,5-trihydroxybenzoic acid presented a very difficult problem but that they discovered a number of new and unusual methods of synthesis. One of the methods is that given in Example I of the patent which follows:

Preparation of 2,3,5-Trihydroxybenzoic acid from salicylic Acid

To a solution of about 138 g. of salicylic acid (1 mole) and 560 g. of sodium hydroxide (14 moles) in 2 liters of water is added over a period of five hours at 20° C., a solution of 684 g. of 98 per cent ammonium persulfate (3 moles) in 2 liters of water. After 15 hours, 1400 g. of concentrated sulfuric acid is added cautiously and the dark solution boiled for 1.5 hours with 20 g. of decolorizing carbon. The mixture is filtered and the cooled filtrate extracted with 5-600 cc. portions of cutyl acetate. The extract is then treated with decolorizing carbon, filtered and concentrated at reduced pressure to a mush of crystals. Then 1 liter of n-hexane, sold commercially as Skellysolve B, is added and the solid separated by filtrating. The impure acid melted at 201° (dt.) Three recrystallizations from hot water raised the melting point to 225° C. (d.).

We have observed that the presence of a large excess of alkaline persulfate is essential to shift the reaction point of equilibrium to produce larger yields of 2,3,5-trihydroxybenzoic acid. When slight excesses of persulfate are used, smaller yields of trihydroxybenzoic acid are obtained, and instead there appeared to be larger quantities of 2,5-dihydroxybenzoic acid (gentisic acid) produced. In place of ammonium persulfate, potassium persulfate or other alkaline persulfates may be used in this reaction.

The patent mentions that the 2,3,5-trihydroxybenzoic acid and its derivative may be administered in various ways. They may be administered orally as a powder in the form of capsules or in the more convenient form of tablets. The composition of a suitable 1 gram tablet, as taken from the patent, is given below:

Formula for 100 tablets:

	Grams
2,3,5,-trihydroxybenzoic acid	100
Lactose	12.5
Corn Starch	2.0
Talc	1.5
Magnesium stearate	0.5
Corn starch, dried	6.0

The tablets are prepared by mixing the 2,3,5-trihydroxybenzoic acid with lactose, screening, and moistening slightly. This mixture is granulated with a corn starch paste made by dissolving 2 gms. of corn starch in 20 cc. of water with heat. After completion of the granulation, the preparation is dried thoroughly at 100° F. To this granulation is added the talc, magnesium stearate and the 6 gms. of dried corn starch. After thoroughly mixing, the tablets are compressed in a conventional tablet machine.

The patent does not contain any animal or clinical data showing the results obtained in the administration of any of the compounds.

Claim 1 is believed to be of interest and follows:

A compound selected from the class consisting of 2,3,5-trihydroxybenzoic acid, a 2,3,5-trialkacyl ester of 2,3,5-trihydroxybenzoic acid, said acyl group containing up to and including four carbon atoms, and their water-soluble salts of a non-toxic metal selected from the class consisting of alkali metal, alkaline earth metal, and the ammonium ion.

NEW USES OF OLD COMPOUNDS

(Continued from last month)

Soap Germicide

Some General Aniline inventors Chiddix, Hesse, and Seiferle just won U.S. 2,638,486 in which they disclose a homologue of hexachlorophene.

The General Aniline compound, 2,2′-ethylidenebis 3,4,6-trichlorophenol, is prepared by reacting 2,4,5-trichlorophenol and acetaldehyde or an acetaldehyde producing compound in the presence of basic catalysts, such as alkali metal hydroxides, sodium hydroxide and alkali metal carbonates, e.g., potassium carbonate.

According to the patent, the compound, 2,2′-ethylidenebis 3,5,6-trichlorophenol is of importance for use as a germicide, fungicide or antiseptic, particularly for

(Continued on page 124)

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Perfumer's Shelf

Oakmoss

In a comprehensive review on oakmoss, F. Chatelain (*Perf. & Essent. Oil, Rec.* 44:91, 1953) states that about 40 years ago Chypre perfume was in popular demand and since then oakmoss products have found increasing use. He notes that oakmoss is to be found in many parts of the world, but several countries have instituted high customs duties on oakmoss products as a protective measure. Oakmoss is found not only on the oaks themselves but also on many other trees, particularly on pines, firs, spruces and fruit trees. That from oaks (or genuine oakmoss) provides the best oils; they have a green color (when they have not been decolorized) and a by-odor of iodine. These oils are the genuine "oakmoss oils." The oakmoss from conifers (pines, firs, etc.), or "treemoss," gives oils of an inferior quality, with a greyish-green color and a resinous by-odor. These are called treemoss oils (or Essences de Mousse d'Arbre). In order to improve them, some iodine is mixed with them.

The best oakmoss and treemoss is gathered during Summer. Natural oakmoss products employed in perfumery are, tinctures, concrete and absolute oils, resinoids, liquids oils, decolorized and colorless oils, distilled oils.

The normal tincture of oakmoss is prepared as follows: 1,200 Gm. of dry and pulverized oakmoss is macerated for 10 days in 2 liters of 95 percent alcohol, the flask being shaken for some minutes every day. The liquid is then filtered and the residue pressed. The residue is again macerated for 10 days in 2 liters of 95 percent alcohol, the resulting residue being washed with 1 liter of 95 percent alcohol. The alcohol of the two macerations and the one washing are mixed, with the result that about 5 liters of tincture of oakmoss is obtained.

Usually oakmoss is extracted with benzene to yield a highly colored concrete oil. This oil may be extracted with alcohol to obtain a highly colored absolute oil. The absolute oil is solid at room temperature and is therefore sometimes mixed with an odorless liquid solvent: either diethyl phthalate, ethyl citrate or castor oil, or a mixture of these three solvents. In order to obtain special qualities, soluble resinoids of orris, storax and myrrh, decolorized absolute oil of labdanum, cedar wood oil; iodine and absolute oil of ivy are also added.

Chatelain points out that because of their dark green color, the several absolute oils of oakmoss and treemoss must be decolorized when they are used in a high proportion in perfume. Usually concrete oils and resinoides of oakmoss are not decolorized. Only absolute oils can be decolorized easily. Absolute oils of Oakmoss are decolorized by means of the two following most-practical processes: (*a*) By the activated vegetable charcoal process; (*b*) By fractionating at reduced pressure. However, two other processes, such as the following, may be employed to decolorize the absolute oils of oakmoss.

(*c*) Fractionation of the absolute oils with the aid of glycerine; and (*d*) Distillation of the absolute oils in a current of steam.

Stabilization of Lemon Oils

In a study of the stabilization of lemon oils by autioxidents, R. Cultrera (*Couserve e deriv. agrumeri* 1:3, 1952 through *Chem. Abstr.* 47:2435, 1952) found that dihydronorguaiaretic acid 0.01–0.04, propyl gallate 0.01 – 0.04, and ethyl gallate 0.01–0.04 per cent have good results in preserving lemon oils from citral oxidation during 30 to 120 days. The use of α-tocopherol was not satisfactory.

Preserving Citrus Oils with Dry Ice

As is pointed out in *Food Engineering* (25:11, March, 1953) it is common, among those who flavor with orange, lemon, and lime oils, to detect flavor deterioration in the oil remaining in container, once it has been opened. Removing the closure permits air to enter bottle or carboy, resulting in unsaturated constituents of the oil being oxidized into products with sharp, bitter flavors. The more often closure is removed, the greater the deterioration.

However, it is easy to prevent each oil oxidation by the following procedure: Drop a small piece of dry ice into container before reclosing. Heat of oil will evaporate the solid carbon dioxide to gas, which will blanket oil and fill space above it, thus preventing oxidation.

Oil of Abies Balsamea

A. C. Shaw (*Canad. J. Chem.* 31:193, 1953) reports that the foliage and terminal branches of *Abies balsamea* yielded 0.951 per cent of an essential oil having the following characteristics:

Specific gravity	**0.8825**
Specific rotation	**– 18.8°**
Index refraction	**1.4737**
Acid value	**0.23**
Ester value	**52.4**
Ester value, after acetylation	**77.2**
Aldehyde and ketone values	**0**

Fractionation of the oil yielded, in percent: 36.1 *l*-βpinene, 11.1 *d*-Δ^3-carene, 11.1 *l*-limonene, 8.4 *l*-α-pinene, 6.8 *l*-camphene, 2.3 myrcene, 1.3 santene, 1.3 tricyclene, 0.05 terpinolene, 14.6 *l*-bornyl acetate, 0.2 *l*-camphor, 0.1 *l*-borneol, 0.3 alcohol, boiling at 91.5–96°, 0.1 alcohol, boiling at 82–3°, 0.1 *d*-canadene, 0.1 bisabolene, trace compound related to *S*-guaiazulene.

Taste Sensitivity

According to a note in *Chemical and Engineering News* (31:1844, 1953), food technologists at the University of California have determined how much material must be present in food before it contributes to the flavor. They found that taste panels can spot a 0.04 per cent saline solution, which amounts to only about one tablespoon of salt in 10 gallons of water. One tablespoon of sugar in two gallons of water stirs the sweet taste—0.2 per cent solution. The sour taste of acid, when concentrated hydrochloric acid is used, can be detected when one tablespoon is diluted in 40 gallons of water. One tablespoon of quinine is spotted when it is present in 1000 gallons, sharply marking the bitter taste as the strongest of all.

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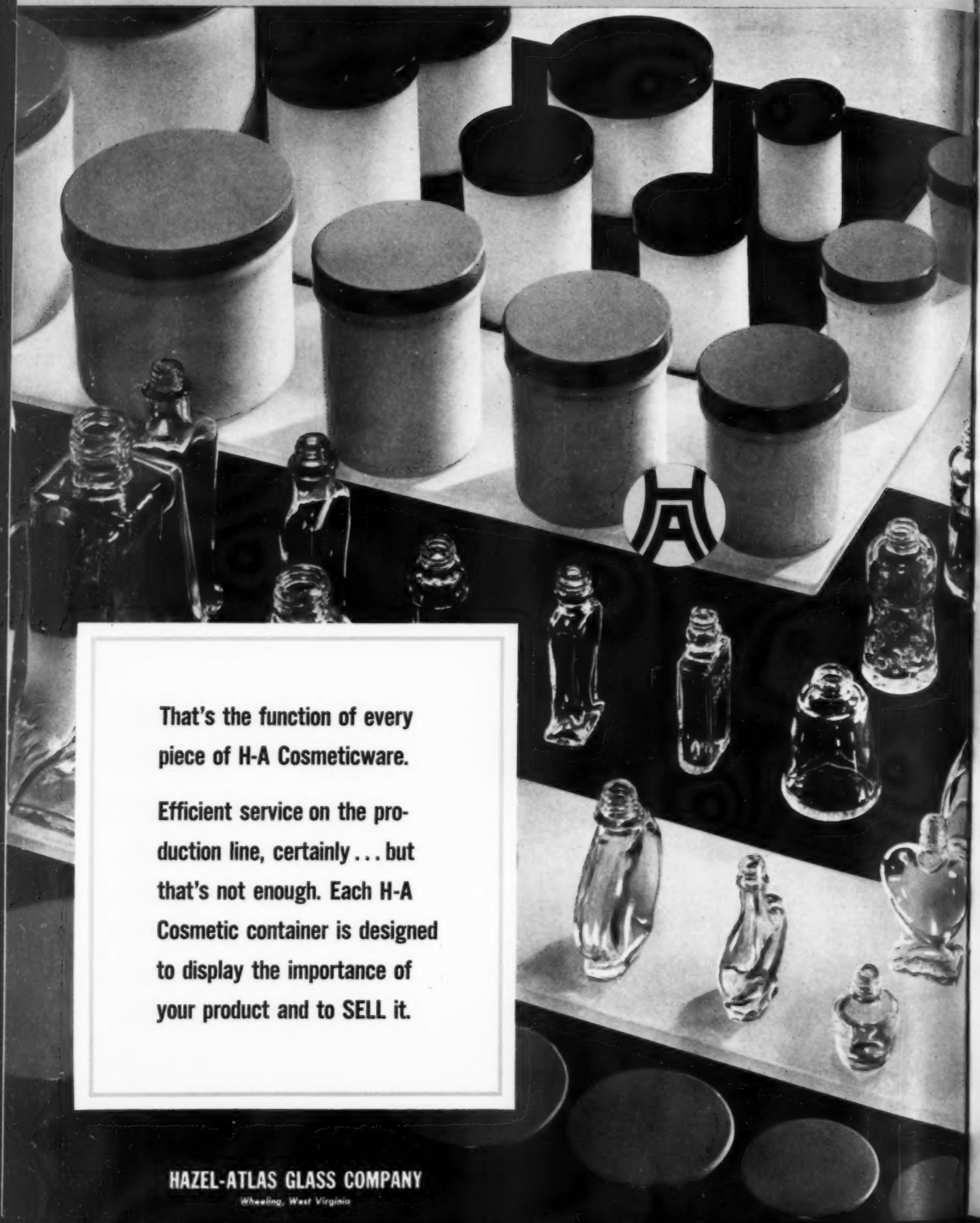

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Oil of Orthodon Methylchavicoliferum

In the first of a series of studies of essential oils of Orthodon (Latiatae) nidigenous to East Asia, Y. Fujita and T. Ueda (*J. Chem. Soc. Japan*, Pure Chem. Sect. 73:287, 1952, through *Chem, Abstr.* 47:40 48, 1953) found that steam distillation of 3,218 Gm. of dried grass of *O. methylchavicoliferum* gave 16.1 Gm. of a light yellow oil with the following properties:

Specific gravity	0.9470
Specific rotation	−2.05°
Index of refraction	1.5072
Acid number	4.8
Ester number	12.6

Eritrean Oils of Ocimum Menthaefolium

The oils from four physiologic varieties of *Ocimum menthaefolium* from Eritrea were investigated by P. Rovesti (*Riv. ital. essenze profumi pianti offic., oli vegetali, saponi.* 34:247, 1952); with emphasis on the differences due to climatic zones. These oils were studied with respect to their content of camphor, estragole, anethole and citral and their physical constants. The first oil, from the Saborguma variety, was obtained in a yield of 0.285 per cent, and had the following properties:

Specific Gravity	0.9288
Specific rotation	11.41
Index of refraction	1.4678
Ester number	5.3
Ester number after acetylation	46.6
Phenol esters (as estrangole)	39.5%
Total alcohols (as $C_{10}H_{18}O$)	13.3%
Solubility in 80% ethyl alcohol	1:2

Rovesti found that *d*-pinene and cineole were prevalent (in the terpene and alcohol fractions); the oil containing 23 per cent of *d*-camphor, 40 per cent of estragole, and 10 per cent of sesquiterpenes and resins.

The second oil, from the Agametta variety, was obtained in a yield of 0.248 per cent and showed the following characteristics:

Specific gravity	0.9608
Specific rotation	2.28
Index of refraction	1.5188
Ester number	9.33
Ester number after acetylation	31.73
Phenol esters	8.94%
Total alcohols	78.5%
Solubility in 80% alcohol	1:3

Linalol and *d*-limonene were present; as was 5 per cent anethole, 73 per cent estragole and 5 per cent of sesquiterpenes and resins.

The third oil, from the Filfil variety was obtained in a yield of 0.236 per cent. It has the following properties:

Specific gravity	0.9727
Specific rotation	1.53
Index of refraction	1.5396
Ester number	3.73
Ester number after acetylation	24.27
Phenol esters	6.97%
Total alcohols	69.5%
Solubility in 80% alcohol	1:3.5

Linalol and *d*-limonene were prevalent (in the terpene and alcohol fractions); the oil containing 39 per cent of anethol, 31 per cent estragole, and 11 per cent of sesquiterpenes and resins.

The fourth oil, from the Sciabab variety, was available in a yield 0.212 per cent; the oil having the following properties:

Specific gravity	0.9115
Specific rotation	−6.41°
Index of refraction	1.4790
Ester number	7.47
Ester number after acetylation	37.33
Phenol esters	10.16%
Total alcohols	19.8%
Total aldehydes	56.1%
Solubility in 80% alcohol	1:3

Geraniol and *d*-limonene were present; the oil containing 56 per cent of citral, 20 per cent of estragole and 5 per cent of sesquiterpenes and resins.

A variety intermediate between the first and second varieties was found at Ghinda. The oil, obtained in a yield of 0.267 per cent, contained 7 per cent of camphor, 3 per cent of cineole and 58 per cent of estragole.

Cinnamein in Tolu Balsam

According to L. Rosenthaler (*Pharm. Ztg.-Nachr.* 88:716, 1952), the cinnamein content of Tolu balsam, defined as the ether-soluble fraction freed from acidic constituents, is best determined by triturating a 1 Gm. sample with 5 Gm. sand, extracting with ether, extracting the ether solution with sodium hydroxide, drying the ether extract, distilling off the ether and drying the residue for one hour at 103 to 105° C. The results obtained with six balsams thus examined varied from 5.2 to 13.4 per cent. All the extracts obtained showed optical activity.

New Solvent Extraction Process

According to the claims of H. D. Sauvage in French patent 977,640 (through *Chem. Abstr.* 47:4054, 1953), perfumes and essential oils are extracted from vegetable material by using a low-boiling solvent, and distilling and fractionating in a closed cycle at a low temperature. Among the specified solvents are propane, butane and pentane. Atmospheric or reduced pressures may be used. The material to be treated may be stabilized by immersion in liquid nitrogen and carbon dioxide. Solvent retained in the vegetable matter may be washed out with alcohol.

Otto of Jasminum Sambac

In a report appearing in the *Perfumery and Essential Oil Record* (44:10, 1953), D. R. Dhingra, G. N. Gapta and U. N. Shukla state that *Jasminum sambac* is the well known variety of the Jasmin species. Mentioned often in oriental poetry, the best known centers of its cultivation in the U.P. State are Kanauj, Jaunpur, Ghizipur and Sikandarpur Distt. Ballia. Flowers gathered in these and other areas were treated by infleurage, solvent extraction or distillation in order to obtain the ottos. However, because the quantities of otto by enfleurage and solvent extraction methods were too small to be examined, only the samples of ottos prepared by direct distillation method at different centers were analysed. Optical rotation could not be determined as the samples were dark in color. The physico-chemical constants of the ottos obtained in various areas are given below:

	Otto prepared at				
	Kannauj	*Hassayan*	*Sikandarpur*	*Ghazipur*	*Kanpur*
Specific gravity at 30° C.	0.9727	0.9778	0.9795	0.9797	0.9769
Refractive index at 30° C.	1.506	1.507	1.507	1.507	1.506
Acid value	6.4	7.6	4.68	1.51	11.36
Saponification value	127.6	134.2	136.20	126.7	141.00
Ester value	121.2	126.6	131.52	125.19	129.64
Total esters calculated as benzyl acetate	32.45	33.89	35.20	33.52	34.70
Saponification value after acetylation	239.2	229.8	241.3	235.9	233.7
Total alcohols as linalol	35.58	30.73	32.90	33.16	30.99
Methyl anthranilate	2.88	—	2.97	3.51	3.06
Indole	2.75	—	—	2.82	—
Solubility in 95% alcohol	One part in 9 parts of 95% alcohol.				

Animal Health

Neomycin for Infection in Geese

Geese are raised in the irrigated sections of New Mexico principally for weed control in cotton fields and along irrigation ditches. They require little feed and are considered to be susceptible to few diseases. However, R. T. McCarty (*J. Am. Vet. Med. Assoc.* 122: 386, 1953) has reported an outbreak of disease in goslings eight weeks of age causing leg weakness, a "spraddled" condition, and a high death rate. An organism suspected of being a Salmonella of the fowl paratyphoid group was isolated from the intestines and later identified as *Salmonella derby*. Sulfamethazine was apparently of no benefit so neomycin sulfate, *per os*, was tried. The death loss in the treated group was 6.25 per cent, while that of the untreated group was 54.54 per cent. McCarty is of the opinion that the treatment apparently increased recoveries sufficiently to warrant further study.

Cortisone for Ketosis in Cows

According to a report cited in the *Journal of the American Veterinary Medical Society* (122:378, 1953), cortisone acetate, 0.5 Gm. given intramuscularly, was administered to 29 cows with ketosis, 24 of which had failed to respond to glucose therapy The response was excellent in all 29 cows.

The case histories of six animals were given in the original report (*Canad. J. Comp. Med.*, Feb. 1953). The most stubborn case was a 5-year-old Holstein-Friesian that had been affected with ketosis the previous year. She calved normally Jan. 3, 1951; on January 12 she refused food and the Rothera test was strongly positive. She was treated on 29 of the following 60 days with four breaks of from five to seven days without treatment. On 18 of the 29 days she was treated from two to five times and almost every treatment included 500 cc. of 50 per cent glucose, a total of 52 bottles. In addition, calcium gluconate, glycerine, brewer's yeast, and vitamin B_{12} were also administered. On March 1, she was given one Gm. of cortisone with no other treatment. Two days later her appetite was normal, her milk production was increasing, and she had no further relapses.

Mange Treatment

Local and systemic treatments for demodectic mange have been tested on 25 affected dogs by M. F. Guryanova and A. E. Dulebov (*Veterinariya* 29:29, Oct. 1952 through *J. Am. Vet. Mec. Assoc.* 122:326, 1953). The most effective combination was one per cent trypan blue, 0.5 to one cc. per kilogram, intravenously, and sulfur dust locally. The success of the treatment was judged by the disappearance of the mites from the skin, lymph nodes, and feces. Four dogs were killed for autopsy after treatment. No mites were found.

Poultry Growth Response to Antibiotics

The factors affecting the growth response of chicks and turkey poults to antibiotics have been studied by H. C. Saxena, L. R. Berg and J. McGinnis (*Poultry Sci.* 31:1070, 1952. Two experiments were conducted with chicks kept in wire floored battery brooders and in floor pens with wood shavings litter to determine growth response to various levels of diamine penicillin and terramycin hydrochloride and combinations of both, under the two conditions of environment. The responses obtained with penicillin and terramycin and combinations were more consistent and greater for chicks kept in floor pens than for those kept in battery brooders. Diamine penicillin gave the best response under both environmental conditions. Combinations of the two antibiotics gave no greater growth response than penicillin alone.

Two experiments were conducted with turkey poults kept in electrically heated battery brooders in which half of the wire floors ordinarily used were replaced by metal pans covered with wood shaving litter. The responses obtained in these two experiments were slightly greater to antibiotics when a litter floor was used than when the poults were kept on wire floor. In all cases, a highly significant growth response was obtained by addition of antibiotics. Although there was a greater and more consistent growth response in poults kept on litter floor, the differences were not of sufficient magnitude to be statistically significant.

Combination Intravenous Anesthesia

In his report in *Veterinary Medicine* (48:201, 1953), H. C. Hall discusses the combining of three sedative drugs—methadone hydrochloride, scopolamine hydrobromide, and pentobarbital sodium—to produce anesthesia in dogs by intravenous injection. His dosage of methadone depends on two general factors. First is the size, age, and general condition of the dog. In older animals, he is more generous with methadone than in young, vigorous animals. The second factor is schedule of surgery in relation to administration. In the event he plans to operate as soon as the patient and his instruments are prepared, he uses between 0.1 and 0.25 mg. of methadone per pound of body weight. He administers scopolamine simultaneously, usually in the same syringe. If an interval of an hour or more is anticipated before surgery, he uses 0.5 or 0.66 mg. of methadone per pound body weight. In old or out-of-condition dogs, he sometimes uses as high as 1 mg. per pound live weight.

Scopolamine is given immediately before pentobarbital. Scopolamine dosages are less variable than those of the other members of the combination and 1/200 gr. serves for any dog from 20 to 60 or 70 pounds. For the toy breed, 1/400 gr. is effective. Scopolamine is available in hypodermic tablets. Hall dissolves a dose in 10 cc. of normal saline solution.

Far less pentobarbital sodium is required to produce surgical anesthesia when it is used following methadone and scopolamine, than when it is used alone. As a general rule, the heavier the dose of methadone, the lighter the dose of pentobarbital. By using 1 mg. of methadone per pound of dog, he has produced surgical anesthesia with 1 gr. of pentobarbital for each 20 pound of body

weight. Usually 0.1 mg. per pound will reduce the dose about one-half. For most routine surgery, the additional analgesic action of methadone and scopolamine permits surgery without struggling under a lighter stage of anesthesia than is possible using a barbiturate alone. Hall stops the injection at the point at which ocular reflexes are practically *nil*, and pinching the interdigital web produces only slight tightening of muscles, but no movement.

Use of a combination of sedative agents in anesthesia has several advantages over all of the commonly used injectable agents used alone. Its principal advantage is that it is safer. This combination permits surgery on dogs whose age and condition make inadvisable the use of barbiturates alone. Recovery is faster than with phenobarbital, but not as fast as with Pentothol or Suretol. Almost always, the awakening is quiet and unmarked by excitement or fear.

Growth Factors in Chick Diets

Considerations in providing vitamin B_{12}, antibiotic and unknown growth factor for chick diets have been discussed by E. L. Johnson (*Poultry Sci.* 31:955, 1952). He states that vitamin B_{12} increased growth and livability of chicks receiving diets devoid of animal protein. Antibiotics and dried whey provided growth responses in addition to vitamin B_{12} when the protein level of the diet was not more than 22 per cent. The differences in growth responses provided by the antibiotics and whey became smaller as the birds approached 12 weeks of age. This change in relative response may be the result of a decreased requirement of the chick for an unidentified factor(s) associated with the feeding of whey or antibiotics. This report does not indicate whether such unidentified factors are synthesized after consumption of the whey or antibiotic or whether these compounds are actual sources of the growth stimulant.

A combination of aureomycin, penicillin, streptomycin and terramycin was not superior to penicillin alone in stimulating chick growth. Antibiotics did not reduce the crude protein requirement of the young chick in the presence of vitamin B_{12}. The protein requirement was also not affected by the addition of methionine in the presence or absence of penicillin.

Fish solubles and homogenized condensed fish produced different growth rates in chicks fed diets deficient in vitamin B_{12}. The difference in these two marine products when fed at a three per cent level was demonstrated to be the result of a higher level of vitamin B_{12} in the fish solubles.

Snake Bite in Dogs

H. L. McGee (*Vet. Med.* 48:202, 1953) employs a 20 per cent solution of calcium gluconate for the treatment of snake bite in dogs; the amount injected depending on the location of the wound, the degree of swelling and other factors. Thus, a little dog weighing approximately 18 pounds, will receive about 20 cc. of solution injected in and around the point of venom injection, in addition to 10 cc. intravenously and 1 cc. of penicillin to combat secondary infection.

Dairy Calf Nutrition

In a report presented at the 38th annual meeting of the American Association of Cereal Chemists (through *Agri. & Food Chem.* 1:426, 1953), C. B. Knodt stated that in recent years the economic value of milk has encouraged the development of milk replacement formulas for raising dairy calves to the extent that the amount of fluid milk needed to raise these animals has been reduced from 400 to 25 pounds each. Considering that over seven million dairy calves are raised each year, it is easily seen that a significant contribution has been made to the supply of milk available for human consumption.

However, says Knodt, more research is needed on prenatal calf nutrition and on the nutritional requirements of young calves, as is indicated by the high annual loss of dairy calves. As an example of the benefits of research, he pointed to studies of vitamin A which showed that calves from dams fed 1 million international units per day of vitamin A alcohol and acetate had higher blood levels of the vitamin, gained in body weight at a greater rate after birth, and had a lower incidence of scours than those whose dams were fed the same amount of vitamin A in alfalfa meal, or the control animals. Furthermore, it has been shown that feeding vitamin A-deficient rations to cows may result in abortion or birth of dead, weak, or blind calves.

In general, requirements for thiamine, riboflavin, niacin, pyridoxine, pantothenic acid, and vitamin K are met by rations commonly used today in combination with synthesis by rumen bacteria. However, the development of new types of rations may require supplementation with some of these and other vitamins.

Research has been directed to the use of specific amino acids such as *dl*-methionine as supplements for the protein content of calf rations, but no beneficial effects or minimum requirements have been determined.

Fortified Diets vs. Mange

Preliminary investigations by D. A. Shorb (through *Agri. Research* 1:15, March-April, 1953) suggest that fortified diets may help pigs to throw off mange. It is pointed out that mange is caused by a mite that burrows under the skin, resulting in itching, loose hair, bleeding, and scabs. Badly infested pigs may die. Those that live are unthrifty at best.

Shorb observed mange at seven weeks in a litter and decided to check their reaction to a diet fortified with aureomycin and vitamin B_{12}. Six pigs from the litter were separated into two groups of three. One group was fed a balanced mash; the other group got the same diet, fortified with growth stimulators. The three pigs on the regular diet stayed mangy and made poor gains. Their weights at 2 and 5 months were (1) 23–37, (2) 23–46, and (3) 33–62. The pigs fed a fortified mash steadily lost mites and gained weight. Weights at 2 and 5 months were (1) 24–64, (2) 32–78, and (3) 32–86.

Aureomycin and Anaplasmosis Carriers

Aureomycin hydrochloride has been shown to have some effect of the etiologic agent of anaplasmosis. Further data on this action is provided in the studies of C. C. Pearson and W. E. Brock (*N. Am. Vet.* 34:408, 1953). Their findings indicate that a total of 47.5 Gm. of aureomycin hydrochloride, given intravenously in five divided doses twelve hours apart to an 1,100-pound anaplasmosis carrier cow, modified the etiologic agent of the disease to the extent that it was prevented from producing anaplasmosis on subinoculation for 30 to 60 days. However, following this initial period, anaplasmosis could be produced by subinoculation into susceptible animals, but in a mild form on the first subinoculation. Further serial passage through a second animal resulted in some increase in the severity of the resulting anaplasmosis.

MODULAN

MODULAN is a chemically treated lanolin containing all the constituents of lanolin deliberately modified by a unique treatment to introduce new and valuable properties.

It represents a radical departure from lanolin in structure, function and odor, and more closely approximates the normal human skin fat.

Investigations now being conducted indicate that **MODULAN** is hypo-allergenic.

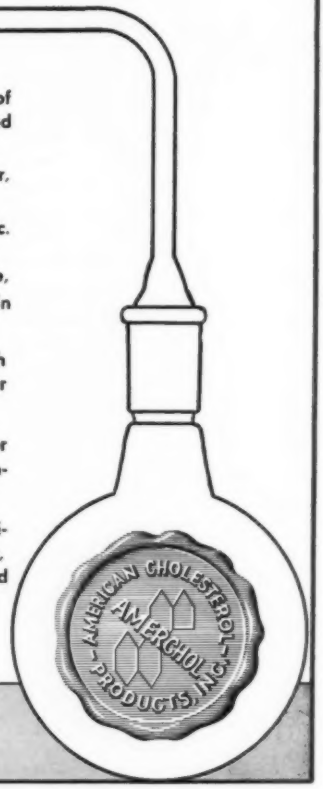
SOLUBILITY— Because of induced chemical differences in molecular structure, MODULAN is far more hydrophobic than lanolin and forms clear solutions in mineral oil.

TEXTURE— MODULAN solutions leave water-resistant protective films which are inherently softening and prevent defatting. These films are waxy rather than tacky and are very agreeable to the touch.

COMPATIBILITY— Because of its outstanding compatibility with oil-in-water emulsions and with soaps and shampoos, MODULAN can be used in high concentrations without affecting stability and foaming.

In addition to the above mentioned advantages, MODULAN deposits an emollient, protective film and is therefore highly effective in baby oils, hair dressings, soaps, shampoos, oil-in-water creams and lotions, lipstick, and other cosmetic and pharmaceutical products.

Detailed information available on request.



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Abreast Of The Markets

Markets Remain Sluggish Throughout June; Iodine, Quicksilver and Eugenol Lower; Salol Price Up

The markets continued in a very sluggish manner during the month of June, with very few changes in both the essential-oil and the botanical prices, and a few developments in the chemical field. Spokesmen in the essential-oil industry indicate that prices are established at a fairly good level at the present time, and they do not expect any major changes for the time being. The Korean War has ceased to have very much of an effect on the markets, because consumers and dealers have become acclimated to the present world conditions.

On the botanical side of the picture, sources report that this market has had several handicaps this year. First of all, the spring season was later than usual and caused a delay in the growth of the various plants. Added to this is the fact that there has been a scarcity of workers for the arduous task of collecting roots, bark, and herbs. This scarcity arises because other industries, capable of paying much higher salaries, have been attracting these migratory workers away from the botanical field. As a result, some scarcities have begun to develop in the botanicals, and prices are expected to advance in future months.

In the fine chemicals, one essential-oil house has announced the preparation of a substitute for coumarin to be used in flavoring, and vanilla sources report they have had heavier inquiries as a result of the coumarin question. One of the most interesting developments in this field was the price advance in citric acid, the first one in about five years, attributed to higher production costs.

Crude Iodine Competition

The price of domestic crude iodine went down to $1.30 during the middle of June in order to meet the competition offered by the Chilean material at the same level. There is much speculation in the trade at the present time as to the effect this will have on Japanese iodine which has been selling at $1.77 a pound. Sources estimate that about 300,000 pounds of iodine have been exported from Japan to the United States during the last twelve months.

Quicksilver Down

As a result of a lull in the market, the price of quicksilver has gone down to $191 a flask from the previous figure of $195. There are reports of lower prices emanating from Mexico, but these had not been substantiated by the end of June.

Anethol Still in Spotlight

Owing to the difficulty in obtaining anise oil, the substitute material, anethol, has been having a good deal of attention of late. The price continues to range between $1 and $1.60 a pound, with no variation expected for quite some time.

Salol Up 5c

Granular salol advanced during the early part of June to $1.10 a pound for 200-pound barrels and 100-pound kegs. Twenty-five pound drums were quoted at $1.13 a pound. The powdered material was priced at $1.35 a pound for both a 200- and a 100-pound drum.

Eugenol Reduced Again

In some quarters last month eugenol was selling for as low as $2.40 a pound, or 30 cents under the previous quotation.

Alcohol Demand Steady

With the call for alcohol going along at a steady rate, and the production keeping pace at the same time, spokesmen in the industry were of the opinion that prices would remain as they are for some time to come.

Sandalwood Oil Unchanged

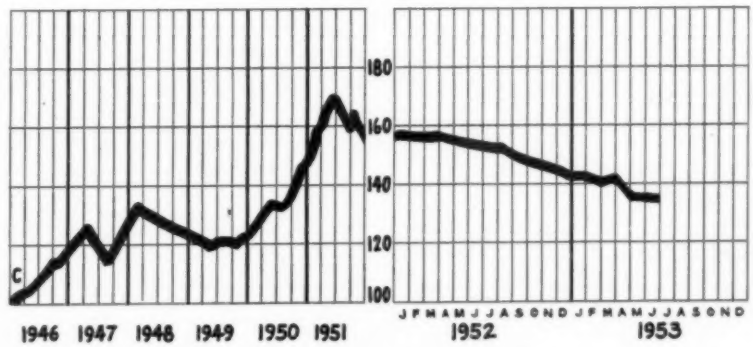
While there were reports of sandalwood oil selling at $9.75, most of the essential-oil houses were keeping within the range from $10 to $12.50. There may be a decline toward the end of the summer when new-crop material enters the market.

Menthol Decline Halted

Dealers believe the decline in menthol prices has been checked and that the trend will turn upward in a short time. The reason for this is said to be that import licenses are difficult to obtain

(*Continued on page 104*)

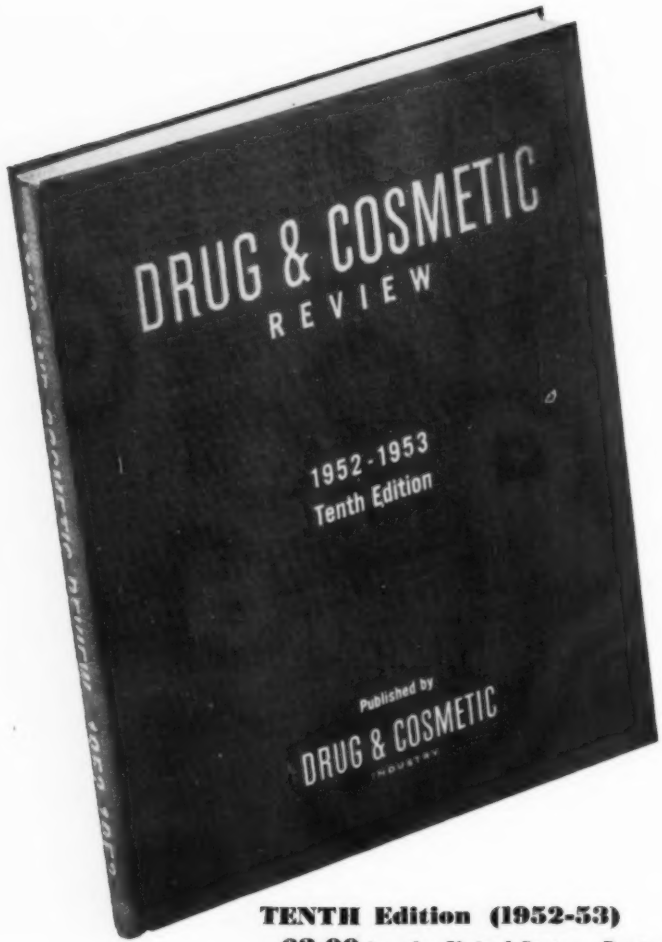
25 Cosmetic Raw Materials—Unweighted Price Index. 1926=100.



The cosmetic raw materials index declined slightly from 135.8 to 135.6. Menthol was lower.

Prices quoted in this section were current on the first of this month.

Where to find it



1—Who Sells It
Chemical Raw Materials - Packages - Equipment

2—Trade Name Products
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Raw Materials (1951-1941)

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Citric Acid Price Lowered First Time in Two Years; Substitute For Coumarin Now Ready; Vanilla Bean Scarcity Expected

For the first time since 1948, the price of citric acid was changed last month, and advanced 2½ cents per pound for the U.S.P. grade. It is now selling for 27 cents a pound in carload lots, 27½ cents a pound for 10,000-pound lots, and up to 29½ cents a pound for smaller quantities. Reason for the change was said to be the higher cost of manufacturing, coupled with greater labor and raw-material expenses.

Substitute for Coumarin

One essential-oil house last month announced the preparation of a compound to be used instead of the highly controversial coumarin. The product contains no coumarin or coumarin derivatives. The company suggests that it be used in any formula in which coumarin or tonka is now being used. The product is said to be "high in fixative value and approximately equal in flavor strength and tonal quality to coumarin.

Agar Expected to Rise

Although the price of agar was hovering around $2.10 a pound the last week in June, it is almost a certainty that it will be much higher in the immediate months to come. Several factors are behind this expected climb.

European buyers have been purchasing the material in amounts far above the average, and this has eaten heavily into the available stocks in Japan. The price of some of the stocks in Japan, which at this time are very limited in size, are said to be selling for as much as 30 cents more than the $2.10 now quoted on spot. It is expected, therefore, that these higher prices will soon be reflected in the spot market.

Shortage in Juniper Berries

The 20-cent quotation on juniper berries is nominal as far as replacements are concerned, since there are very few berries available at the present time. Since there will not be a new crop of berries until the Fall or early winter, and since there are almost none to be had from the producing center, there is a dire shortage at the present time. In addition to this condition, it is reported that Italy produced just about a half of its normal crop last year, making the situation that much more severe.

Saffron Difficulties

Prices from Mexico on saffron have been climbing steadily in the past few weeks so that, by the end of June, they were close to $1.45 a pound. The reason for this sharp increase is said to be that the Mexican crop has proven to be less than half the normal size owing to poor weather conditions. The effect of these adverse conditions has just begun to reach the spot market.

More Pressure on Vanilla

Following the decision of manufacturers to avoid the use of coumarin in foods, dealers reported that the demand for vanilla increased measurably. On the supply side of the picture, it is reported that producers at the source are holding out for higher prices in many cases. Since the new crop of vanilla beans will not be available until January of next year, and since current stocks at the origin are small, it is virtually certain that the market will become firmer as time goes by.

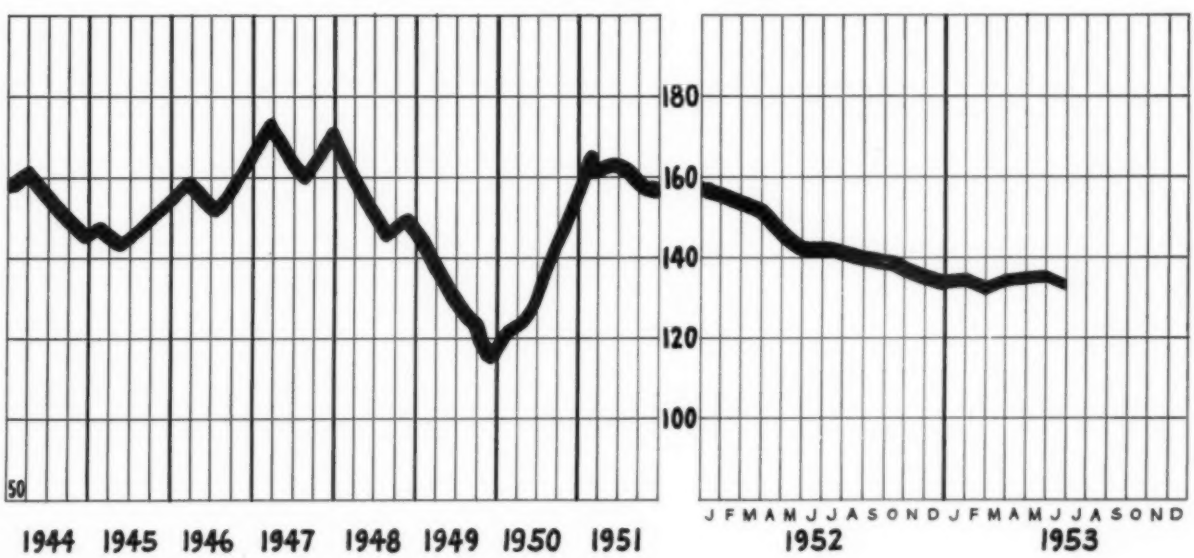
As a result of the low-priced vanilla of last year, production is now suffering because many growers have turned to other, more remunerative, commodities, such as coffee.

Bourbon vanilla beans remained at $4.50 last month, with Mexican cuts going up to $4.25 a pound, and Mexican whole beans selling for $4.50.

Ipecac Root Scarce

The price of ipecac remained at $5 last month and extended up to $5.75, with little chance of reduction at the present time. Because European dealers have been buying heavily in this market, and are continuing to do so, there are scant supplies on stock in the spot market.

50 Raw Materials—Weighted Price Index. 1926=100.



The price index of fifty commodities for June went down from 135.4 to 132.9.

JUNE PRICE CHANGES

UP

Anise Seed Star, Spanish 1c
Citric Acid 2½c
Ergot 5c
Orange Oil, Amer. Cold Pressed 25c
Amer. Distilled 10c
Peppermint oil, Natural 35c
Redistilled 15c
Saffron, American 35c
Salol 5c
Vanilla Beans, Mex. Cut 25c

DOWN

Geranium Oil, African $1
Bourbon $1.75
Iodine, Crude 40c
Menthol 10c
Mercury $4
Senega Root 20c

Menthol Decline Halted

(*Continued from page 101*)

and this very fact has drawn attention to the menthol market. Interest in this commodity has been revived, and if it keeps up, prices are expected to begin advancing. Toward the end of June, Brazilian menthol was priced at $5.80 a pound, ranging up to $5.85 for small quantities, and $7.50 to $7.60 for the Japanese material.

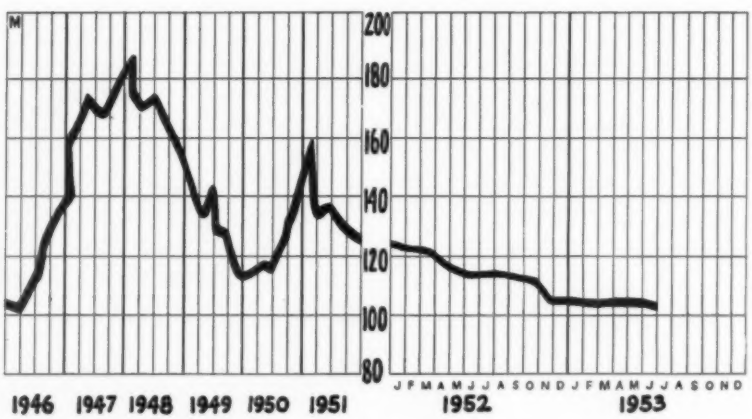
Cascara Bark Late This Year

Dealers report that cascara bark production is off to a late start this summer because of bad weather and also because the season was so long in arriving.

Aloes May Advance

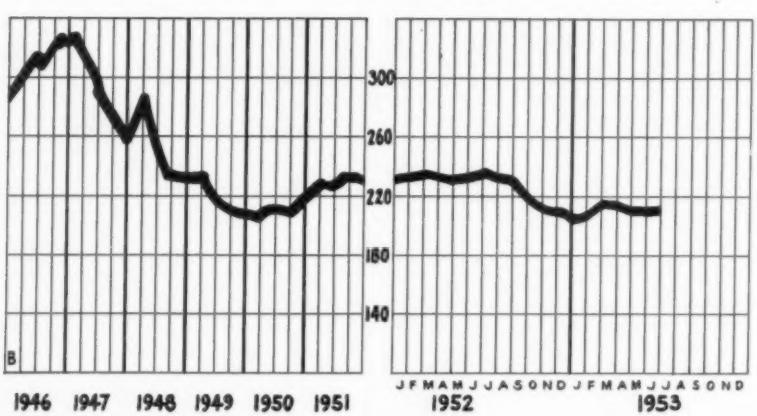
With the current price of aloes ranging between 65 cents and 70 cents, some authorities believe this commodity will probably go up considerably in the next few months. The new-crop material which was collected in January of this year has just about been used up, and another crop will not be forthcoming for quite some time.

15 Medicinal Chemicals—Weighted Price Index. 1926=100.



The medicinal chemicals index went down slightly from 104.3 to 102.7. Citric acid was higher; iodine, menthol and mercury were lower.

15 Botanicals—Weighted Price Index. 1926=100.



The botanicals index advanced slightly from 209.9 to 210.1. Ergot was higher.

Chamomile Flowers Firm

Although there have been recent replacements of chamomile flowers from Hungary there is still a shortage in the botanical. Many orders are still outstanding, and these unfilled orders will prevent any large stocks from building up on the spot market. The price for the Hungarian flowers was 95 cents a pound last month.

Belladonna Picture Good

There was no change in the price of belladonna leaves last month from the 50-cent level, and, according to sources, none is expected in the immediate future. Ample stocks have been entering the United States from the source, and yields in the various crops are proving to be up to normal.

No Change in Buchu Leaves

Buchu leaves remained in the range between 45 cents and 50 cents last month in general, although there were reports of lower-price material on hand. Imported material arriving on the spot market was said to be in large enough quantity to take care of all needs, with plenty left over.

Report on Mint Oils

The Department of Agriculture recently indicated that there will be less acreage devoted to peppermint in several areas this year. In Michigan, for example, the planting area is about 500 acres less than the previous season and approximately 2,400 acres less than the 1949-1951 average. In Oregon and Washington the acreage is expected to be seven per cent less, and Wisconsin is expected to have some 10 per cent more land devoted to peppermint.

Spearmint, on the other hand, is expected to have more acreage this year than last, with a 13 per cent increase in Indian and a 15 per cent addition in Michigan.

Lemongrass Oil Steady

There was no change in the $1.30 price of lemongrass oil from the previous month, although there were reports of lower figures from scattered sources. A reduction in price is expected

shortly, judging from the complete lack of demand for the oil at the present time. If a sudden spurt in demand develops, however, producers at the source can be expected to push their quotations up simultaneously.

Bergamot Oil Steady

The price of bergamot oil remained between $12 and $14 during June, with reports of a definite firmness developing during the latter part of the month. One authority suggested that bergamot oil would follow Italian lemon oil, as far as price changes are concerned. In other words, if the lemon oil quotation is altered during the next few months, bergamot will probably undergo a similar change.

Lime Oil Very Active

As a result of a very heavy demand for lime oil during the hot summer months, the price of the oil has been maintained at $6.35 for the distilled material and $7.85 for the expressed. Fortunately, there has been more than enough oil to handle all needs, and there has been no sign of any shortage up to the present time.

Orange Oil on Firm Side

With the Florida orange oil production on the low side, it appeared last month that a shortage will continue to develop in this item, as stated in the previous month's market report. Not only has the production of Florida orange oil proved to be smaller than had been expected, but also, the producers of concentrated orange juice are adding the oil to their product in order to promote a better taste. This procedure will cut into the available orange-oil supplies quite deeply.

Lemon Oil Remains Very Firm

Domestic lemon oil remained in the range between $6.35 and $6.75 during June, with several dealers being forced to drop out of the market entirely because of a complete lack of stock. In contrast to the lack of California oil, there was considerably more Italian oil available, but this too is being affected by a serious shortage which promises to be of a long duration.

Anise Oil Unchanged

Following the recent tightening of restrictions by the United States to curb Dutch imports of anise oil into this country, there has been very little change in this particular market. Although the Government has made it known that it will issue permits to import non-Communist anise and cassia oils, no such permits have been asked for as yet, and consequently the domestic supply of the oil is quite meagre. Presumably, trade between the Asiatic countries, under Red control, and the United States will be resumed as soon as a final settlement is arrived at in Korea.

Peppermint Oil Higher

There was a reversal in the peppermint-oil price last month when the downward trend was checked and the inside quotation went up to $5.85 for the natural oil and up to $6.15 for the redistilled material. Spokesmen indicated that there was a limited amount of high-test oil available. There was no way of telling, by the end of June, what the size of the new crop will be, and on this hinges the future price of the oil.

Geranium Oil Lower

Both the African and bourbon geranium oils were lower in June, with the former being quoted between $10 and $11, and the latter, between $9.75 and $10.75. These oils have been slipping down during the past few weeks, and at the same time demand has been reported as average.

Bois de Rose Still High

The price of bois de rose oil remained at $4.10 a pound last month, with spokesmen indicating that most of the material in Brazil has been sold out. There is a limited amount of oil on the spot market at the present time, but it appears that the oil will remain firm for quite some time to come.

Clove-Oil Estimate

The Zanzibar Clove Growers' Association reports that the Mwaka clove crop, which will be harvested this month, expected to be of a fairly good size. In addition to this crop, there is the second picking of the 1952-53 crop of Vuli, which has already been completed. It will take a little while yet to determine the outcome of the entire crop.

Zanzibar shipped a total of 26,338 pounds of clove stem oil during the first quarter of this year to the United States and Great Britain.

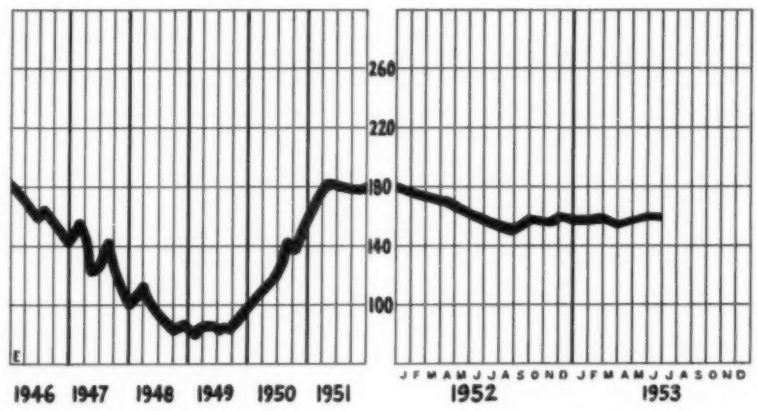
French Essential-Oil Exports

Exports of essential oils from France went up to 934,243 kilograms in 1952 from 881,744 kilograms in 1951, according to *Foreign Commerce Weekly*, but dropped below the 1,071,270 kilograms exported in 1950. The value of these exports was 4,886,485,000 francs in 1952, as compared to 5,455,683,000 francs in 1951 and 3,961,758,000 francs in 1950.

The report continues by stating that exports of perfumes and toiletries from France to foreign countries rose to 5,216,028,000 francs in 1952 from 4,386,575,000 francs in 1951 and 3,080,283,000 francs in 1950.

The floral essence producers at Grasse reported a marked decrease in sales from the 10.5 billion francs in 1951 to the 6.5 billion in 1952.

15 Essential Oils—Weighted Price Index. 1926=100



The essential oils index fell from 159.8 to 159.0. Peppermint oil was higher, geranium oil, lower.

Shampoo Formulation

(*Continued from page 39*)

the fibre; in the case of octadecyl alcohol, higher concentrations, however, showed decreased lubricity. Unsaturation in the fatty chain was found detrimental; stearic acid was more effective than oleic acid. Methylation or saponification of the fatty acid had no very great effect on lubrication properties. It would not be surprising if similar results were obtained on protein fibres.

Lubricity, however, is not the only requirement for a finishing agent when used in a shampoo. The finishing agent must exhaust onto the hair in preference to the large excess of detergent. It must exhaust at relatively low temperature and within a few minutes. It must resist rinsing with large quantities of water.

There are, of course, great differences in the adsorption characteristics of surface active agents. Eighteen carbon compounds adsorb on metal from cetane in this order (increasing); alcohol, carboxylic acid, amine, amide[1]. These observations may not be valid for hair and, at any rate, are for equilibrium conditions. Actually equilibrium is probably not attained in shampooing. Some recent work[3] on tagged alkyl aryl sulfonate and sodium palmitate indicates that soap is adsorbed more rapidly from water onto wool fibre during the first thirty minutes, but thereafter the synthetic surpasses the soap, desorption of the soap from the fibre is much slower.

This, then, is the major problem in shampoos. When it is solved, the ultimate in shampoo formulation will have been reached.

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Cosmetic Aerosols

(*Continued from page 33*)

cible in all proportions with the solvent and the limit of compatibility is the point at which the shellac begins to coagulate and settle from the dispersion. With a commonly used hair lacquer formula this point is reached when 40 per cent of "Freon-12"* (dichlorodifluoromethane) has been added or about 65 per cent of "Freon-12" (dichlorodifluoromethane)—"Freon-11" (trichloromonofluoromethane) solution.

A different type of compatibility is represented by antiperspirant formulations containing aluminum salts. For example, aluminum chlorhydroxide complex is quite soluble in water and not appreciably soluble in the propellent. The propellent is not soluble in water and enough auxiliary solvent such as alcohol must be used to provide complete solution. The amount of propellent that can be dissolved depends on the relative amounts of alcohol and water and to a smaller extent on the amount of salt present. For solutions containing 15 per cent salt and an alcohol-water ratio of about 63 per cent, "Freon-12" is apparently a little more soluble than "Freon-11"—about 16.5 per cent compared with 13.5 per cent.

The other end of the compatibility scale is found in water based products such as shaving lathers and shampoos where the solubility of the propellent is very small. Here the propellent is present as a second liquid phase which is emulsified with the aqueous phase during use but may separate as a clear liquid layer on long standing. In a typical example, a propellent composed of "Freon-12" and "Freon-114" (dichlorotetrafluoroethane) was found to have a solubility of about 0.8 per cent by weight in a shaving lather concentrate.

*Freon is a registered trade-mark of E. I. du Pont de Nemours & Company.

Pressure

The pressure in aerosol formulations is important because it controls to some extent the quality of the product and because it is regulated by the I.C.C. for interstate shipment. The I.C.C. regulations do not cover containers with a volume less than 4 cu. in. or products with pressures less than 25 p.s.i.g. @ 70° F. Pressures up to 40 p.s.i.g. are permitted in the ordinary low pressure aerosol containers and up to 60 p.s.i.g. in the "2P" specification seamless containers with heavier bottoms. If formulations with still higher pressures are desired, the container would require special I.C.C. approval.

The pressure can be controlled in several ways including choice of propellent, concentration of propellent, type of solvent and method of loading. The nature of the formulation and the compatibility probblems involved determine to a large extent which variations can be used. Individual propellents may vary in pressure from less than atmospheric for "Freon-11" to 122.5 p.s.i.g. at 70° F. for "Freon-22" (monochlorodifluoromethane) as shown in Figure 6. In addition, any intermediate pressure can be obtained by using solutions of two or more of the pure compounds. The range of pressures produced by two such solutions—using

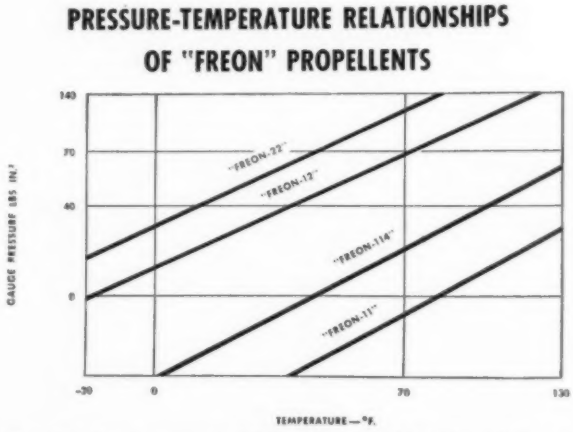


Fig. 6—Vapor pressure of "Freon" fluorinated hydrocarbon propellents.

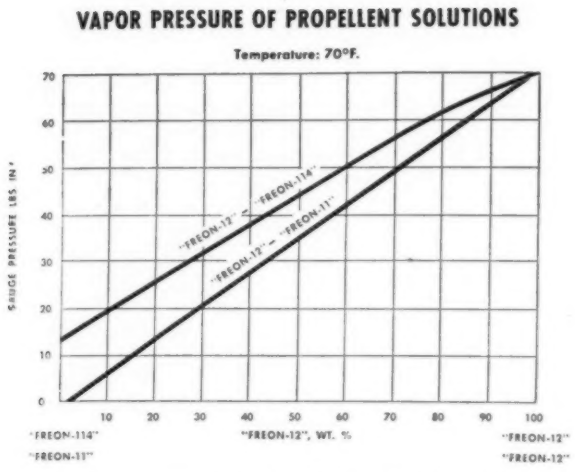


Fig. 7—Vapor pressure of "Freon" fluorinated hydrocarbon propellent solution.

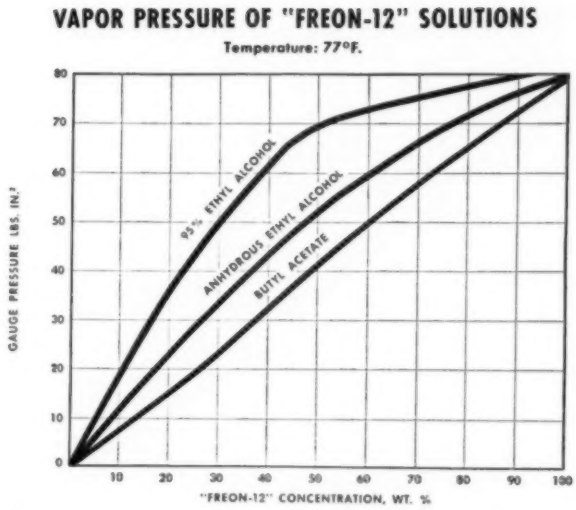
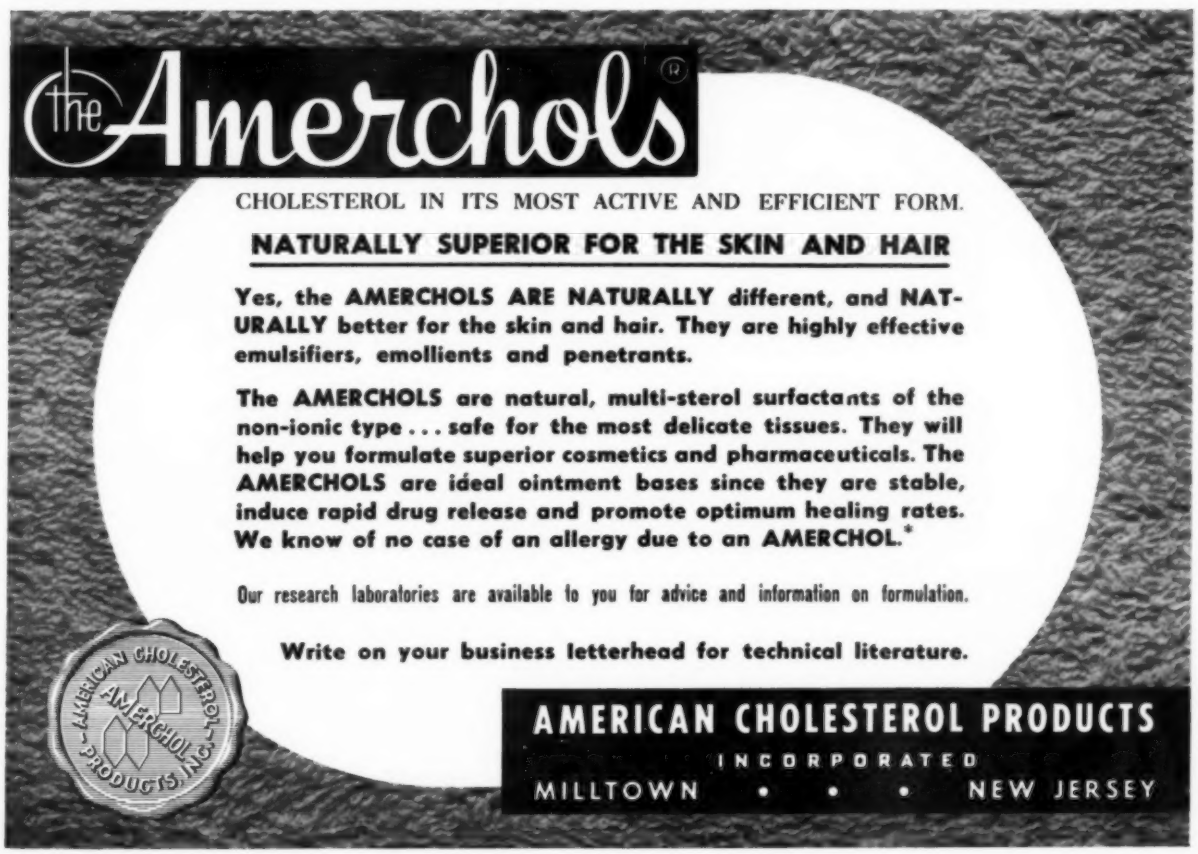


Fig. 8—Vapor pressure of "Freon-12" dichlorodifluoromethane in solution with various organic solvents.

"Freon-12" with "Freon-114" and "Freon-12" with "Freon-11"—is illustrated in Figure 7. Other pressure ranges are covered by various combinations of the other common propellents.

The pressure is affected by the nonvolatile solvent, if any, used in the formulation as shown in Figure 8. Solutions containing the "Freon" fluorinated hydrocarbon propellents in many cases are "normal" and the vapor pressures are close to those estimated from the simple gas laws. This type of solution is illustrated by butyl acetate and also generally holds for solutions with hydrocarbon and halogenated solvents. On the other hand, solvents that are quite different in chemical nature, such as the fluorinated hydrocarbons and the alcohols, tend to produce solutions with pressures higher than might be expected. The presence of water in the solution has a relatively large effect on the pressure as shown by a comparison of the curves for anhydrous and 95 per cent ethyl alcohol. From Figure 8 it can be seen that the pressure can be almost doubled by the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choice of the nonvolatile part of the solution. In a few cases azeotropic mixtures may be formed where a particular composition may have a vapor pressure higher than any of the individual components.

Aerosol products are commercially charged into the container by one of two methods. The propellent may be cooled below its boiling point and poured liquid phase into the open can or it may be charged into the closed can through the valve under pressure. The vapor pressure of the formulation tends to be higher when the can is loaded by the pressure method than when loaded by the refrigeration method. This difference is related to the air in the can which has no chance to escape during pressure loading. As an illustration of the possible difference a pressure of 40 p.s.i.g. was found when a formulation was cold loaded in the laboratory as compared with a pressure of 51 p.s.i.g. when the same formulation was pressure loaded. To comply with I.C.C. regulations, if this product were pressure loaded the manufacturer would need to use the heavier "2P" classification can. The high pressure resulting from this method of loading would be avoided if the can were evacuated before filling.

Spray Character

An important property of the finished aerosol product is the character of the spray when it is dispensed from the can. The nature of the spray can be widely changed by varying the concentration of the propellent and/or the pressure of the formulation. For the examples shown in Figure 9 where the total pressure was

EFFECT OF PROPELLENT CONCENTRATION ON SPRAY CHARACTER

TOTAL PRESSURE: 39 psig
25% Propellent

TOTAL PRESSURE: 40 psig
60% Propellent

Fig. 9—Higher propellent concentration causes a mistier spray.

about 40 p.s.i.g. a propellent concentration of 25 per cent produced a wet spray with relatively large droplets that tend to settle rapidly. When the propellent concentration was 60 per cent a fine, misty spray was formed. In Figure 10, formulations containing 50 per

EFFECT OF PRESSURE ON SPRAY CHARACTER

TOTAL PRESSURE: 13 psig
50% Propellent

TOTAL PRESSURE: 36 ptig
50% Propellent

Fig. 10— Higher pressure in the container producers a mistier spray.

cent propellent are illustrated. A high pressure produces a misty spray while a low pressure produces a much wetter, stream-like spray. Although not illustrated here, the valve design is also important in determining the character of the spray.

The character of the discharge in foam-type products may also be changed by differences in the formulation. Variations in foam structure for different propellent concentrations are shown in Figure 11. The propellent in these examples was a solution composed of 40 per cent by weight of "Freon-12" (dichlorodifluoromethane) and 60 per cent of "Freon-114" (dichlorotetrafluoroethane). The shampoo A formula in percentage by weight consisted of 35 per cent "Duponol" WA paste fatty alcohol sulfate, three per cent polyethylene glycol 400 distearate, one per cent magnesium stearate and 61 per cent water. Stiff, dry, elastic foams are produced at higher propellent concentrations, whereas soft, somewhat wet, and less resilient foams are produced at lower propellent concentrations.

Different propellents tend to produce different types of foam as illustrated in Figure 12. These differences may, in part, be related to the vapor pressure of the propellents used in the formulation. Even though the propellents are present in the same concentration, those

PRESSURE PACKED SHAMPOO

EFFECT OF PROPELLENT ON PHYSICAL APPEARANCE OF FOAM

5% 10% 15%

"FREON-12" AND "FREON-114" (40/60) PROPELLENT WITH SHAMPOO A

Fig. 11— Increased propellent concentration gives a stiff foam.

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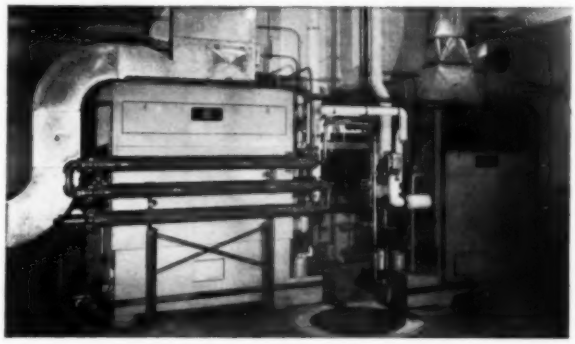

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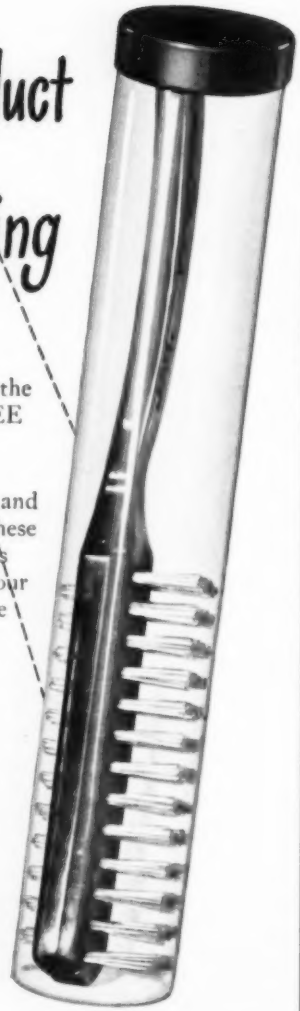

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with higher pressures tend to give a stiffer and more elastic foam than those with lower pressure. The propellents illustrated in Figure 12 have the following vapor pressures at 25° C. (77° F.):

"Freon-12" dichlorodifluoromethane..... 80 p.s.i.g.
"Freon-12" dichlorodifluoromethane—
"Freon-11" trichloromonofluoromethane 41 p.s.i.g.
"Freon-12" dichlorodifluoromethane—
"Freon-114" dichlorotetrafluoroethane.. 44 p.s.i.g.
"Freon-22" monochlorodifluoromethane—
"Freon-114" dichlorotetrafluoroethane.. 49 p.s.i.g.

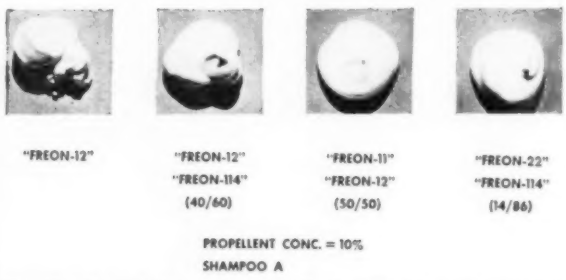

Fig. 12—Formulations using propellents with high vapor pressures produce dry, stiff foams.

Corrosion

The problem of corrosion in the aerosol container is generally of more concern in the packaging of personal products than for other types of aerosol formulations. This is primarily due to the use of water or alcohol in many of the personal type formulations. General rules for predicting corrosion behavior are difficult to establish and each product should be thoroughly tested from this standpoint before it is released for public use. However, as a result of a considerable amount of corrosion study, some trends can be discussed.

The data in Table I show a comparison between the use of anhydrous and aqueous ethyl alcohol. Use of the anhydrous alcohol in steel would seem to offer no problems although there is some corrosion when in contact with "Freon-11" (trichloromonofluoromethane). As might be expected, when water is present, as in 90 per cent aqueous ethyl alcohol, the corrosion of steel is increased but in the presence of "Freon-114" (di-

TABLE I
CORROSIVE EFFECT OF WATER IN ETHYL ALCOHOL AT 130°F

	Inches Penetration Per Month	
	Anhydrous Ethyl Alcohol	90 Per Cent Aqueous Ethyl Alcohol
STEEL		
"Freon-114"	0.7×10^{-6}	21×10^{-6}
"Freon-12"	2×10^{-6}	16×10^{-6}
"Freon-11"	375×10^{-6}	2400×10^{-6}
ALUMINUM		
"Freon-114"	725×10^{-6}	6×10^{-6}
"Freon-12"	2350×10^{-6}	8×10^{-6}
"Freon-11"	4650×10^{-6}	7000×10^{-6}

chlorotetrafluoroethane) and "Freon-12" (dichlorodifluoromethane) the corrosion level is still negligibly low. With aluminum, however, the situation is reversed and with anhydrous ethyl alcohol the metal is severely attacked, while in most cases there is little corrosion with aqueous alcohol.

A similar comparison is shown in Table II for anhydrous and aqueous isopropyl alcohol and the same general trend is evident except for the reaction between aluminum and anhydrous isopropyl alcohol in the presence of the more stable propellents.

TABLE II
CORROSIVE EFFECT OF WATER IN ISOPROPYL ALCOHOL AT 130°F

	Inches Penetration Per Month	
	Anhydrous Isopropyl Alcohol	90 Per Cent Isopropyl Alcohol
STEEL		
"Freon-114"	7×10^{-6}	22×10^{-6}
"Freon-12"	6×10^{-6}	32×10^{-6}
"Freon-11"	526×10^{-6}	544×10^{-6}
ALUMINUM		
"Freon-114"	4×10^{-6}	32×10^{-6}
"Freon-12"	4×10^{-6}	22×10^{-6}
"Freon-11"	2040×10^{-6}	1300×10^{-6}

The tests described in Tables I and II were conducted on commercially pure 2S aluminum. A comparison of this type with other types of aluminum is given in Table III. Generally, aluminum alloys containing copper such as aluminum 11ST are more corroded by aerosol formulations than the purer forms of aluminum.

TABLE III
ALUMINUM CORROSION
60 Per Cent Foot Spray with Mixed Solvents
40 Per Cent Propellent

Propellents	A1—2S	A1—52S	A1—11ST
"Freon-12" + "Freon-11"	55×10^{-6}	44×10^{-6}	122×10^{-6}
"Freon-12" + "Freon-114"	0×10^{-6}	-6×10^{-6}	87×10^{-6}

The problem of corrosion is especially severe in water-based formulations containing a synthetic detergent. Products of this type have not been successfully marketed because the percentage of failures has been uneconomically high. Laboratory tests do not indicate an unreasonable amount of corrosion but in practice in steel containers, localized severe corrosion may occur

Fig. 13—Corrosion caused by aerosol shampoo formulations.

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with the development of pin holes. The interior surfaces of the opened cans in Figure 13 illustrate the extent and appearance of the corrosion caused by these products. When soap is used in this type of formula in place of the synthetic detergent, pin hole corrosion does not occur. There is some evidence that small amounts of soap added to the synthetic detergent are effective in reducing the general corrosion. The data in Table IV illustrate this result. The corrosion comparisons shown there were determined on steel test pieces sealed in glass tubes together with the detergent formulations and "Freon-12" (dichlorodifluoromethane) as the propellent. "Freon-12" by itself had practically no effect on the steel but when water was also present some corrosion was found.

The heaviest corrosion was caused by the detergent formulation without inhibitor although, as indicated above, it would not ordinarily be considered serious. In these laboratory tests, the addition of one per cent Ivory soap, ammonium stearate or aluminum palmitate reduced the indicated corrosion to a negligible level. Whether or not these additives would be effective on a commercial scale would need to be tested under actual loading and storage conditions.

TABLE IV
CORROSION INHIBITORS FOR DETERGENT FORMULATIONS AT 130°F
"Duponol" WA (85 per cent) + "Duponol" ST (15 per cent) with "Freon-12" dichlorodifluoromethane

Detergent Formulation	Corrosion of Steel Inches/Month
Without inhibitor	67×10^{-6}
With one per cent Ivory Soap	5×10^{-6}
With one per cent Ammonium Stearate	4×10^{-6}
With one per cent Aluminum Palmitate	10×10^{-6}
"Freon-12"—Water	36×10^{-6}
"Freon-12" (anhydrous)	0.3×10^{-6}

Summary

Many different personal products have been successfully adapted to the aerosol method of dispensing. These products have found ready acceptance at a consumer level and are expected to account for about half of the total number of aerosol units produced this year.

When a new aerosol formulation is being developed it should first be thoroughly investigated in the laboratory. All problems concerning compatibility, pressure-spray character and corrosion must be solved before the final product is submitted to the public.

Up to Date on Vitamin A

(Continued from page 35)

stone formation. Calculi have been produced in animals on diets deficient in this substance.[56] In addition, as noted by Higgins,[57] biophotometric tests indicate that a high proportion, perhaps 40 per cent, of patients with calculous disease show vitamin A deficiency. He advises the administration of vitamin A as a part of the care required in this condition. Some observers[58] are of the opinion that vitamin A orally, in doses of 25,000 units daily, helps to maintain the renal epi-

thelium in a normal condition. Lattimer[59] feels that it is probably advisable to give vitamin A to all stone-forming patients. Usually 100,000 units per day are prescribed for such cases.

In addition to these therapeutic applications, the medical literature of the last few years provides other examples of potential uses for vitamin A. It may be useful, for example, in the treatment of leukoplakia. In cases of leukoplakia of the mouth, it has been recommended[60] that vitamin A in large dosage be given daily for a prolonged period. This, of course, is in addition to the removal of local irritants, such as the correction of poorly fitting dentures and the avoidance of smoking and strong drinks and foods.

In cases of leukoplakia of the vulva, Hyams and Gallaher[61] found that relief of such symptoms as pruritus and local irritation, as well as marked histological changes in vulvar tissues, followed vitamin A therapy. These results are in accord with their belief that vulvar leukoplakia is a manifestation of some metabolic disturbance and that a vitaminA deficiency is one of the potent factors in its etiology.

Leitner,[62] in England, believes that every pregnant woman suffering from any severe infection or febrile disease during the first trimester should be given additional vitamin A. He also suggests[63] that it might prove advantageous to give 40,000 to 50,000 units of vitamin A daily in rheumatic fever.

In Switzerland, Dainow[64] classes vitamin A as an antianemia medicament. He reports that marked improvement was produced by repeated intramuscular injections of the vitamin into 15 subjects suffering from anemia.

Certain diseases of the bone may also benefit from the use of vitamin A. Menniti[65] of Italy treats osteoarticular tuberculosis with solutions of vitamins A and D in conjunction with streptomycin and with *para*-aminosalicylic acid. Such combined therapy, he reports, has a beneficial effect on the course of the disease and on the general condition of the patient.

In two cases of osseous lipoidosis, described as a new form of Niemann-Pick disease, Castellanos and his colleagues[66] obtained cures with single massive doses of vitamin A. The two children with this disease showed areas of osteolysis in the skull. With these patients, 2,400,000 units were given in a single dose in one case and 2,000,000 units in the other. This resulted in rapid improvement in the osteolytic areas, but radiologic evidence of cure was not obtained until later.

Increasing attention is being focused upon the place of vitamin A in animal feeds and on the methods for supplying adequate amounts of this essential nutrient. Bourne[20] has pointed out that disturbances resulting from inadequate intake or utilization of vitamin A or its precursors are among the most common of the nutritional disorders seen in all species of farm animals, including poultry.

The most important sources or precursors of vitamin A for livestock are the carotenes in roughages, silages and pastures. Any reduction in their feeding values

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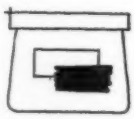

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will increase the possibility of a vitamin A lack in the ration. These and other factors account for the growing recognition of the value of feed supplementation with vitamin A in one or more of its several types or forms.

Many of the symptoms or metabolic defects of vitamin A that are seen in man are also observed in livestock. Young animals that eat rations low in vitamin A become unthrifty, suffer from scours, and are very likely to develop respiratory difficulties, such as pneumonia. In addition, such animals grow slowly and make poor use of their feed.[67]

As is well known, the vigor and health of newborn animals depends to a large extent upon how well their mothers were fed. Therefore, calves and lambs dropped by dams fed rations low in vitamin A may be dead at birth or be very weak. In the majority of instances, the weak youngsters die in a short time or, if they live, rarely do well. In general, breeding animals fed rations low in vitamin A will reproduce inefficiently. Moreover, many difficulties encountered in calving or lambing are attributed to an inadequate vitamin A intake.[67]

In discussing other conditions in animals associated with vitamin A deficiency, Bourne notes that there is evidence to support the theory that avitaminosis A is one of the factors responsible for urinary calculosis in ruminants. In dogs, one effect of vitamin A deficiency consists of hyperplasia of the epithelial surfaces at the gingival margins, with greater chances for infections that lead to pyorrhea. The deficiency also influences tooth structure, with the odontoblasts laying down bone instead of the normal dentine.

In the poultry field, reduced hatchability and increased embryo mortality in fowls are among the most common symptoms of avitaminosis A. Lack of the vitamin is also associated with a condition involving the renal pelves and ureters. These channels, as well as other parts of the body, become clogged with urates because of an inability to eliminate uric acid from the system.

The growing importance of this nutrient in animal and poultry feeds is well indicated by the increasing interest in methods for improving the stability of vitamin A or its precursors in these rations. The need for such research has long been recognized by animal nutritionists who know that there is extensive loss, by oxidation, of vitamin A in stored hay, grains and ensilage. As remarked by Bourne,[20] hay exposed to sunlight, while storing additional vitamin D, loses its vitamin A quite rapidly.

One approach to the problem of supplying adequate vitamin A in certain types of feeds has been through the use of dry, concentrated supplements. Such products, often based on synthetic vitamin A, are claimed to be well suited for feed fortification because they are highly stable under the conditions at which the rations are usually stored. Several such supplements are available, but research leading to the development of products with heightened stability and other desirable properties is now under way.

These dry vitamin A supplements have been studied

by various investigators. In the work done by Burns and Quackenbush[68], tests were made to determine the stability of such preparations both as received and when mixed with some of the common ingredients of feeds. The results show that all of these dry vitamin A products represent an improvement over vitamin A oils of the past, but that none of the dry products is greatly superior to the others. The investigators found that the seven different dry commercial vitamin A products containing 150 to 1500 micrograms of vitamin A or carotene per gram retained 60 to 85 per cent of their initial vitamin during a six-month storage period in the dark at room temperature. The highest stability was shown by products which employed vegetable meals or the antioxidants which they contain.

A portion of each of the products was mixed with corn meal, soybean oil meal, or glucose in such proportions that the mixtures contained approximately 10 micrograms per gram of vitamin A or its equivalent in esters or β-carotene. Soybean oil meal (expeller) improved the stability of the vitamin in most of the products. Ground yellow corn showed a similar effect but to a lesser degree. Glucose (cerelose) diminished the stability in all cases.

Other elements were studied by Wall and Kelley.[69] They found that such factors as temperature, concentration, the carrier, and the source of the vitamin all play important roles in the stability of dry carotene or vitamin A mixtures. Thus, decreasing storage temperature resulted in increased stability. It was also observed that a 100-fold increase in concentration, from 3,000 to 300,000 units per pound, similarly resulted in a marked increase in stability.

Noting that the effect of the carrier was often obscured by other variables, the investigators found that extracted soybean meal afforded the highest stability. Extracted broccoli leaf meal was excellent for carotene, but poor for vitamin A. Chick mash was inferior. It was likewise observed that the effects of the vitamin source were often overshadowed by the other environmental conditions. When a stable carrier was used, there were no significant differences between the vitamin A and carotene preparations at the 3000-unit level. At 300,000 units, the molecularly distilled carotene from broccoli showed a marked increase in stability over corresponding vitamin A or undistilled carotene preparations. The distilled carotene consists largely of neo-β-carotene isomers. The carotene thus prepared has been shown to have full biological potency for poultry.

According to Wall and Kelley, these findings show that feed mixers can prepare relatively stable dry mixtures of high vitamin A potency by using a proper combination of temperature, concentration, carrier, and vitamin source.

Also important are the studies made by Kramke, Lloyd and Fritz[70] to determine the influence of various factors on the utilization of the vitamin A in poultry rations. They found that stabilized vitamin A dry supplements gave more than the expected vitamin A

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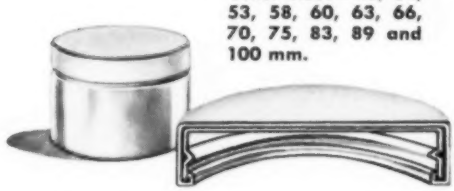

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activity when compared with the U.S.P. reference standard oil solution. It is suggested that this discrepancy is due to loss of vitamin A activity when the oil is added to the basal ration. On a ration in which the only obvious source of vitamin A activity was 0.75 per cent alfalfa meal, chick growth was improved by the inclusion of crude soybean lecithin, defatted lecithin, or crude soybean oil. Addition of tocopherol or methylating agents had much less effect upon utilization of the vitamin A activity.

Addition of wheat germ oil to the basal ration permitted turkey poults to utilize carotene more efficiently for growth. Preformed vitamin A was well utilized under the conditions of the test without the addition of the wheat germ oil to the ration. In turkey starting rations, essential optimum growth of the poults was obtained with 2,250 units of vitamin A activity per pound regardless of whether the source of the vitamin A activity was vitamin A alcohol, natural vitamin A esters, synthetic vitamin A palmitate, or carotene supplied by alfalfa or an oil solution.

During recent years, research workers have added considerably to the data concerning the role of vitamin A in animal health. Thus, Braude and his associates[71] have helped to further strengthen the observation that animals can accumulate large stores of vitamin A and are able to call on these reserves and make use of them in the absence of the vitamin in the diet. In their experiment, it took about 20 months for a normal sow to show symptoms of vitamin A deficiency when deprived of this nutrient. During this period she produced four normal litters. The investigators feel that if her behaviour is any indication of conditions in normal breeding stock, it would seem that sows previously well-managed would carry reserves of vitamin A sufficient to tide them over a reasonable period of temporary deprivation with no ill effects.

In view of the increasing use of aqueous dispersions of vitamin A for humans, it is noteworthy that animals can also make ready use of this type of preparation. In studies with lambs, Bolin, Eveleth and Bolin[72] found that the intramuscular injection of 7,500 units of two types of water-miscible vitamin concentrates per pound of body weight, together with 135 units of hyaluronidase, caused average gains of 135 and 230 units per Gm. of liver, respectively. When the same amount was given intravenously, the liver gain was 261 units per Gm. and, when given orally, the gain was 97 units. These determinations were made within approximately 24 hours after administration.

The intravenous injections produced a height of 2,331 units of vitamin A per 100 cc. of blood serum within approximately four hours, while the intramuscular injections caused a slower increase with maximum values varying from 755 to 1,318 units after about 24 hours. The blood levels varied widely with the orally administered vitamin.

These investigators[73] have also reported that vitamin A-deficient sheep are susceptible to parasitism. In their study, ewes were fed a carotene-low ration in

order to decrease their vitamin A reserves. Lambs born to these ewes were very susceptible to intercurrent infections and in many cases the ewes either died or failed to produce milk. Later, when the lambs were exposed to the gastro-intestinal parasites, they died from acute parasitism. The effect of parasites on the conversion of carotene to vitamin A could not be determined but the lack of resistance to parasitism of vitamin A-deficient lambs was well illustrated.

Of related interest is the finding by Davies[74] of lowered vitamin A reserves in cases of avian coccidiosis. He suggests that invasion of the intestinal wall by coccidia may result in impaired conversion of carotene to vitamin A. The administration of cod liver oil to the fowls accelerates recovery from the condition, probably because of its Vitamin A content.

The potentialities of vitamin A in other phases of the animal industry are indicated in European studies[75] of the effects of vitamin A-iodoprotein combinations on milk production. It was found that administration of thyroxin plus vitamin A to cows caused a significant increase in milk production and an increase in the fat content of this milk. In tests with various combinations, it was observed that those cows which received both vitamin A and Thyroxin did better with respect to milk production than the animal receiving only the hormone.

From the foregoing, it is quite obvious that vitamin A remains a subject of considerable interest. There is no doubt that improved vitamin A preparations will be developed by the manufacturers and compounders, while new information on its physiology and therapeutic uses will be forthcoming from the clinics and research laboratories.

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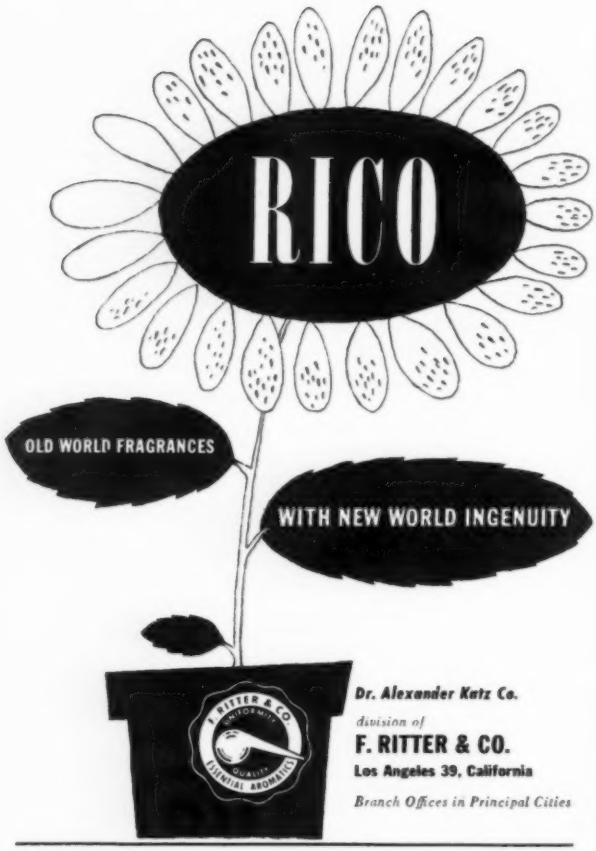

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Drugs as Tumor Inhibitors

(*Continued from page 31*)

radiotherapy is the best palliative treatment, though it has several disadvantages. It is hoped that Myleran will be able to approach radiotherapy as a palliative remedy for this form of the disease and the first series of clinical tests indicate that it possesses the essential requirements in being free from unwanted side effects, easy to administer, relatively safe and efficacious. Confirmation of the last two points, in particular, must await the results of further experience in its use. It is given orally and treatment in hospital is not necessary so long as weekly blood counts are made. Its activity appears to depend on an ability to depress the rate of growth of a narrow range of malignant cells but this apparent selectivity is only relative to the effects of other agents. It does not reverse or stop the process of tumor growth but only slows it down, and, possibly because of its apparent selectivity of action, it has fewer side effects than other treatments.

Aminopterin

This disease of leukemia, or cancer of the blood, is rising in the table of causes of death and affects people of all ages, though it is commonest in children up to ten years old and in adults over fifty. Each year since 1940 more than 5000 people have died of it in the U.S.A. It claims more victims than smallpox, meningococcal meningitis, scarlet fever, polio, malaria, typhoid fever and diphtheria combined.[3] The essential change is in certain tissue cells which fail to respond to the forces normally regulating their proliferation and give rise to a new type of cell with abnormal behavior[4]. The mechanism of this change is not understood and lines of research have to be chosen on hypothetical bases.

The technique of biological antagonism is well established in chemotherapy; an application[5] of it to this problem was to investigate the tumor inhibitory effect of folic acid antagonists. Folic acid is a growth factor which appears to be essential for proper blood formation. By slightly modifying the molecule it might be possible to produce a compound that could be introduced into the blood stream and would compete with folic acid for the metabolites required by the latter. In this way, the biological activity of folic acid would be obstructed and growth would be retarded. If this antagonistic effect on growth could be directed to the malignant cells, the substance might have clinical possibilities. The product of this type that has attracted most attention is Aminopterin which is closely similar to folic acid but carries an amino group where the growth factor has an hydroxyl group.

The clinical conclusions on Aminopterin appear to be less favorable than those on the other drugs mentioned in this report. Its toxic manifestations are numerous and may be severe while the good results are capricious. It has been most successful when used for children. Though this particular compound has not been of great

practical applicability, the idea of utilizing substances with the same basic structure as an essential metabolite, in this case folic acid, to combine with specific enzymes or other cellular proteins and block the metabolic pathways, is a good one which may yet bear fruit.

Glucosamine

Occasionally, there have been reports of cases in which malignant tumors are said to have completely stopped growing after the sufferers had contracted an infectious disease. This has been connected with the substantiated claim that extracts from certain bacterial growth media, when injected parenterally into animals with malignant tumors, kill the tumor by causing hemorrhage within it. This was noticed as long ago as 1882. It came up again for re-consideration in 1931 but did not seem to lead anywhere, principally because the earlier bacterial filtrates were highly toxic in the dosage required to affect tumors. The first problem it raised was the separation of the active agent from the extracts of growth medium and then followed the task of elucidating its chemical nature.

Recently, it has been reported[6] that the tumor hemorrhagic agent in one species of bacterial extract is a complex polysaccharide made up of the monosaccharides D-glucosamine, glucose and galactose. The warm interest in this type of chemotherapeutic substance is partly due to the selective influence it appears to exert on tumors, an influence which cannot be accounted for until more is known of their chemical composition and of the mechanism involved in their action.

Working along quite different lines, some researchers[7] have made a discovery that may link up with this problem. They point out that D-glycosamine, which is a common constituent of animal tissues, can divert an essential co-enzyme, adenosine triphosphate, from its normal metabolic paths in the body. One of these paths is to assist in the breakdown of glucose. This is the process which supplies the energy needed for the synthesis of rapidly growing tumor cells. Consequently, it was thought that the administration of D-glucosamine might affect favorably the rate of tumor growth.

Animal tests have shown that when D-glucosamine is injected there is a slowing down in the rate of growth of experimental tumors. No complete inhibition of development takes place but the expected life of the animal is increased from 30 days to 70 days. Thus, it has been shown that one of the constituents of the complex mixture obtained by the extraction of certain bacterial products, does retard tumor growth and the mechanism of its action is partly understood. Whether this will assist in the isolation of a more potent fraction from these bacterial sources remains to be seen.

It is hoped that further experiments now being made will show that D-glucosamine has therapeutic properties which will permit its application with favorable results to man. At the moment, an attractive feature is its relative inactivity on the tissues of the host and the concentration of its effect on tumor cells. Even if it does not live up to its initial promise, now that the

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idea has been born, some derivatives or analogues may be found which are more effective.

Conclusion

From the above account of new drugs having the power of inhibiting tumor growth, it appears that the two most hopeful approaches to this problem are: to examine substances chemically related to known inhibitors and those which interfere with the biological mechanisms involved in cellular growth. Myleran, Aminopterin and D-glucosamine arose out of such backgrounds. However, as with T.E.M. good results can still be obtained by following up a chance clue and such experiments, based on reasonable theoretical grounds, should be encouraged.

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Human Hazards of Drugs Fed to Animals

(*Continued from page 43*)

exempt also these higher levels in feed bases from certification. Certifiable antibiotics which are exempt by regulation from certification cannot legally be considered new drugs.

Heretofore, it was believed that the feeding of antibiotics to animals presented no problem as a human health hazard. This was based on the belief that antibiotics in general are not accumulative to any extent in the edible tissues and that they are rapidly eliminated from the body of animals and easily destroyed by heat. The experimental data submitted by two manufacturers of antibiotics confirmed this belief. These data also included convincing evidence that eggs, laid by hens fed continuously with 50 to 200 grams of certain antibiotics in a ton of complete feed, contain no detectable trace of the antibiotic. However, the Food and Drug Administration is very much interested in the feeding of high therapeutic levels of antibiotics continuously for the prevention and control of certain specific disease conditions and the Veterinary Medical Branch, in cooperation with our Division of Antibiotics, has already started some preliminary investigations to satisfy ourselves that there is no human health hazard involved. In the meantime until all the facts are known, we have suggested that a warning statement appear on the labels of feeds containing therapeutic levels of antibiotics similar to that for organic arsenic preparations.

Bovine mastitis has for some time been a serious problem of dairymen. Research workers have not found oral treatments of any drug to be effective in the elimination of a variety of bacterial causes from the infected udder. However, within the last ten years they have found certain drugs introduced into the udder through the teat canal effective for specific bacterial

causes of mastitis. Antibiotics administered in this manner have been found to be quite effective in the elimination of most of the bacterial causes. It has been demonstrated that very small quantities of penicillin in the milk used for cheese manufacturing will inhibit reproduction of the starter culture to the point where the entire batch must be discarded. Furthermore, milk containing small amounts of penicillin may be regarded as an adulterated food under Federal statutory definitions. The Food and Drug Administration has therefore requested manufacturers of all drugs intended for intramammary use to include in the labeling of such products a statement somewhat as follows: "IMPORTANT: Milk from treated segments of udders should be discarded or used for purposes other than human consumption for at least 72 hours after the last treatment." This of course does not preclude the use of such milk for the farmer's own pigs or calves since there is no evidence to our knowledge that these animals develop a sensitivity to the antibiotics or small amounts of other drugs that may be used in the treatment of bovine mastitis.

Coccidiosis and histomoniasis, the latter being known also as enterohepatitis or as "blackhead," are two of the most serious diseases of poultry. Many new drugs have been found to be effective for the prevention and control of outbreaks of these diseases in poultry flocks when continuously used as the active drug ingredient in a complete feed base. Some manufacturers of basic coccidiostatic drugs have submitted satisfactory evidence with their new-drug applications to show that there is no accumulation of their particular drugs in the edible tissues of birds which receive the medication continuously. In these instances, we have not required a warning statement for discontinuing the use of the drugs before marketing the birds for human consumption.

A number of other drugs have been developed to promote fattening, stimulate increased milk or egg production, or bring about other physiological changes in farm animals. For example, thiouracil, a very potent drug, has been proposed for use to promote fattening of swine and poultry. Iodinated casein compounds, having thyroid-like activity, have been reported as being capable of stimulating increased milk production in dairy cows and the rate of growth of young poultry and swine. As-yet-unacceptable proposals to feed diethylstilbestrol and other synthetic estrogens to tenderize poultry are other examples. These types of drugs are regarded as poisonous or deleterious substances which, when added to a feed, result in the adulterated feed under the food provisions of the Federal Food, Drug, and Cosmetic Act. These compounds are intended to affect the structure or function of the body of animals. They are therefore regarded as new drugs for which adequate evidence of safety, as required by section 505 of the Act, should be submitted before they can be legally shipped in interstate commerce.

We have received a few new-drug applications for thiouracil to be added to feeds as an active drug in-

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gredient to promote fattening of poultry and swine. After several conferences with the manufacturers, we were not satisfied that they had sufficient evidence to show that the treated animals were safe for human consumption. This led to publication in the *Federal Register* of December 4, 1948, of a notice to manufacturers, packers and distributors of veterinary preparations and animal feeds. This notice, in part, states:

"The Federal Security Agency regards sections 402(a)(2) and 406 of the act as clear enunciations of congressional intent to deny the channels of interstate commerce to food containing added poisonous or deleterious ingredients which are unnecessary in its production or which can be avoided by good manufacturing practice.

"Since these compounds are intended to affect the structure or function of the body of animals and have not been previously used for such purposes, they are regarded as new drugs, requiring the submission of adequate evidence of their safety, as required by section 505 of the act, before being marketed in interstate commerce.

"In considering a new-drug application for a product intended to effect physiological changes in farm animals, the Federal Security Agency will regard the absence of satisfactory evidence showing that the meat or other food obtained from animals fed the drug is entirely free of any poisonous or deleterious ingredient resulting therefrom at the time of marketing as ground for refusal to make the application effective."

Insofar as we know at the present time, thiouracil is not being marketed for this purpose but is available for experimental purposes only.

Several new-drug applications are effective for use in food bases of iodinated casein compounds for stimulating increased milk production in dairy cows and for stimulating the rate of growth in young poultry and swine. We were eventually convinced by the experimental data submitted by the manufacturers that the milk from treated cows would be safe for human consumption and that there is no accumulation of the drug in the edible tissues of poultry and swine.

It is common knowledge today that the Food and Drug Administration has permitted to become effective several new-drug applications for 15-milligram pellets of diethylstilbestrol for use in poultry. These pellets, which are intended for tenderizing and fattening purposes, are to be implanted high up in the neck tissues in such a way that any unabsorbed portion or residue would be discarded with the heads of birds. Information submitted with the new-drug applications convinced us that a 15-milligram diethylstilbestrol pellet properly implanted in poultry offers no hazard to human health. Our investigation of the marketing of birds which had been implanted with diethylstilbestrol pellets did show several instances of careless implantation in which the pellets were located far below the base of the skull in the edible portions of the neck and at least one instance in which more than one pellet had been used. We therefore instituted seizure actions to remove from the

market a number of shipments of such carelessly implaned poultry. Recent investigations have shown that these actions had a corrective effect on such practices throughout the country.

The Administration has not permitted any new-drug application to become effective for diethylstilbestrol or other synthetic estrogens to be mixed in the feed for poultry or livestock, since no satisfactory experimental data have been submitted to show that the treated birds are free of the drug at the time of slaughter.

Recently we received a new-drug application for di-n-butyltin dilaurate to be administered to turkeys through means of the feed for ten to twelve weeks for control of a protozoan disease known as hexamitiasis. Here again we were concerned about the accumulation of a drug in the edible tissues of turkeys, namely organic tin. The manufacturer finally submitted satisfactory analytical data to show that after discontinuing the use of the drug for seven days no organic tin could be detected in the edible tissues. Under the circumstances we informed the manufacturer that the new-drug application may be permitted to become effective if the proposed label bears a definite warning to discontinue the use of the product for at least seven days before marketing the birds for human consumption to allow for the elimination of organic tin from the edible tissues.

Entomologists have recently published some information dealing with parenteral administration of some of the newer highly toxic insecticides for the elimination of certain external parasitic infestations of livestock. To our knowledge these publications did not mention any possibility of the accumulation of these insecticides in the edible tissues of the animals at the time of slaughter for human consumption. From the standpoint of their creating a hazard to human health the Food and Drug Administration is very much concerned about the parenteral use of these insecticides in food-producing animals.

We have also received a new-drug application for an accumulative drug to be administered to swine over a period of three days for its anthelmintic value in the removal of large roundworms which commonly infest swine. While this is a drug which is highly toxic from a human health standpoint, the applicant has proved that, after a withdrawal period of 30 days, it is eliminated from the tissues except for a very small amount which would have no effect on human health. The labeling of this drug will bear a warning that hogs treated with it must not be slaughtered for human consumption within 30 days after treatment. Although the time required for elimination of the bulk of the drug from edible tissues was given weighty consideration, we could not apply the Federal Register notice of December 4, 1948, in this instance since drugs having value for preventing or treating diseases or pathological conditions of animals and poultry are necessary in the production of meat used for food, whereas drugs used merely to affect some physiological change in animals or fowl are not necessary in the production of a food

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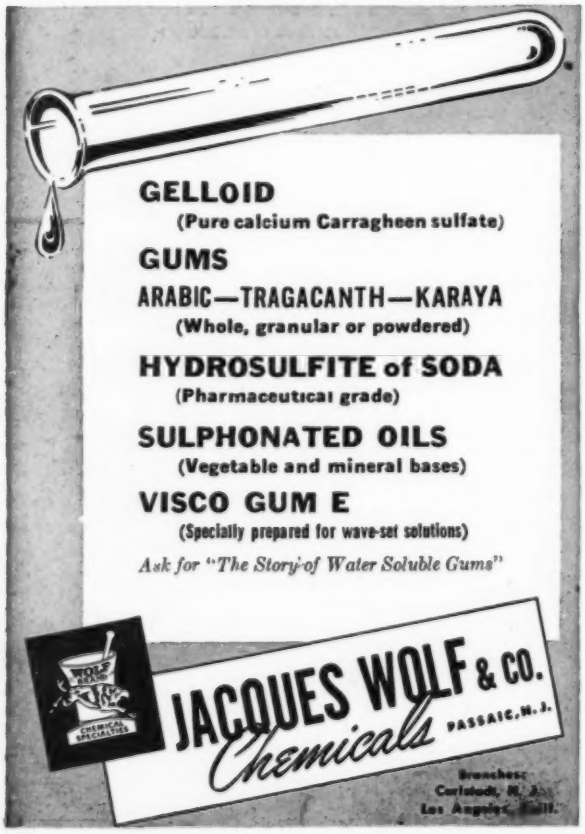

product. We have therefore decided to permit this application to become effective if the applicant agrees to certain suggested changes in his labeling.

From the foregoing it can be seen that this Administration in the enforcement of the Federal Food, Drug, and Cosmetic Act is faced with a serious problem created by the use of drugs in the treatment of animals used for human consumption.

Patent Thoughts and Trends

(*Continued from page 94*)

use as a germicide in soap. The new compound is a white crystalline material which is substantially tasteless and odorless, permitting its use as an antiseptic and germicide. The compound may be utilized as such or its salts may be used in the solid form or in solution or dispersion. It may be used in admixture with other active or inert materials as tooth pastes, ointments, shampoo, cosmetics, dusting powder for rubber goods, etc.

The following table shows the results of bactericidal and bacteriostatic tests comparing the compound with similar or homologous compounds.

Bactericidal test

MATERIALS

(1) Soap—4 per cent solution of soap granules; germicide at a concentration of 2 per cent of soap or 0.08 per cent in the solution.

(2) Detergent—3.5 per cent solution of an alkyl sulfate base detergent; germicide at a concentration of 2 per cent of detergent or 0.07 per cent in the solution.

(3) Difco bacto-nutrient agar.

(4) F. D. A. (U. S. Food and Drug Administration) nutrient broth.

(5) Tryptone-glucose extract agar.

Staphylococcus aureus 209 (now known officially as *Micrococcus pyogenes* var. *aureus*, Bergey VI) is maintained on tryptone-glucose extract agar. Three consecutive transfers are made from this stock culture in F. D. A. broth at 24 hour intervals. The third transfer is used and contains about 500,000,000 organisms per ml.

PROCEDURE

Sterile contact tubes containing 10 ml. of the soap-germicide solution are placed in a 37° C. water bath and permitted to reach temperature. One ml. of the test organism culture is added to each tube and mixed well. After 5 minutes' contact at 37° C., one ml. is removed from each contact tube and diluted to 100 ml. with sterile distilled water. Since a number of tests are run at the same time, this dilution usually stands for about 15-20 minutes before further dilution and plating.

Dilutions of 1-1,000 and 1-10,000 are plated in nutrient agar. The plates are incubated for 48 hours at 37° C. and then counted. The numbers reported are those bacteria remaining alive from the original 1-

ml. sample which was removed from the contact tube. All tests are run in duplicate.

Bacteriostatic test

MATERIALS

(1) F. D. A. nutrient broth.

(2) 0.005 per cent, 0.05 per cent, and 0.5 per cent solutions of soap granules (Ivory Snow).

(3) 0.005 per cent, 0.05 per cent, and 0.5 per cent solution of alkyl sulfate base detergent (Dreft).

(4) 0.001 per cent, 0.01 per cent, and 0.1 per cent alcoholic solution (or acetone if necessary) of germicide.

ORGANISM

Staphylococcus aureus 209, as described in the bactericidal test.

PROCEDURE

Five tubes of both are used for each dilution tested. Each tube contains 10 ml. of sterile broth, 1 ml. of the appropriate detergent dilution, 0.1 ml. of the correct germicide solution, and 0.1 ml. of broth culture as the inoculum. The ratio of detergent to germicide is always 50:1, as before. The concentrations of germicide tested in the final tubes were 1-1,000,000. The turbidity of the solutions are read at zero time in the Coleman Spectrophotometer, Model 6A, at 610μ. After 24 hours' incubation at 37° C., turbidity readings are repeated. Increased turbidity is taken as evidene of growth. No change indicates bacteriostatic action. Changes of 5 units, or less, show good activity at that concentration.

TABLE

Compound	Bactericidal Test [1]		Bacteriostatic Assay [2]	
	Soap	Detergent	Soap, 1-1,000,000	Detergent, 1-1,000,000
1. methylenebis trichlorophenol	26,600	300	1	1
2. methylenebis dichlorophenol	9,000	9,500	2	3
3. Example 1.....	17,000	1,100	0	0

[1] Surviving organisms (*Staphylococcus aureus* 209—Gram+) ml. recovered after 5 minutes' contact with approximately 50,000,000 per ml. at zero time. Each value is the average of at least four separate tests.

[2] These values are given as percent change of light transmission (0-44 hrs. incubation). All tests were made on 5 replicates.

The patentees obtained three process claims, claim 1 reading as follows:

A process for preparing 2,2'-ethylidenebis 3,5,6-trichlorophenol which comprises reacting 2,4,5-trichlorophenol and acetaldehyde yielding substance in the presence of a substantially anhydrous alkaline catalyst.

RECENT PATENTS

2,635,980—**The Wm. S. Merrell Co.—Stabilized Sulfa Drug.**

2,635,981—**Jenson-Salsbery Labs.—Treatment of Frothy Bloat in Ruminants and Tympanic Colic in Horses. Involves use of Organic Silicones and Silicates.**

2,635,982-3—**Lakeside Labs.—Allyl- and Propylurea Mercurated Compounds as Diuretics.**

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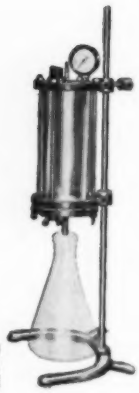

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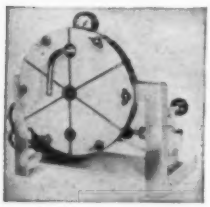

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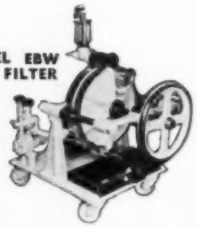

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2,635,984—F. H. Eggert—Preparation of Antigen-Rich Bacterial Toxins and Toxoids.

2,635,985—Merck & Co.—Extraction of Vitamin B_{12} Active Compounds from Aqueous Solutions using Solid 2,4,5-Trichlorophenol.

2,636,032—Abbott Laboratories — N,N′ - Disubstituted Piperazines.

2,636,036—Onyx Oil & Chemical Co.—Aromatic Nitrogens.

2,636,037—Sharp & Dohme, Inc.—2-Amino-4-Piperidinoethyl-Thiazole.

2,636,039—Ciba Pharmaceutical — 4,4 - Disubstituted 3-Amino-5-Halogenpyrazoles.

2,636,042—S. B. Penick & Co.—Water-Soluble Hormones.

2,636,043—G. D. Searle & Co.—Preparation of 16-Ketosteroids.

2,636,045—E. Fougera & Co.—Diuretic Mercury Compounds.

2,636,881—Sharp & Dohme—3-Substituted, 3-Aryl, 2-Pipecolines.

2,636,884—Nepera Chemical Co.—1,3-Dioxolanes Depressants for central nervous system.

2,636,897—Upjohn — N - Oxyalkyl - P - Aminobenzoate.

2,637,680—Danske A. K. (Denmark)—Extraction of Insulin and Enzymes from Pancreas.

2,637,724—Chas. Pfizer & Co.—Methylolstreptomycin.

2,637,726—Armour and Company—Recovery of Cerebrosides.

2,637,728—Upjohn—Protection of Alcoholic Steroid Hydroxyl Groups.

2,637,731—American Cyanamid Co.—Imidazopyridines.

2,637,735—Ciba Pharmaceutical—Preparation of Steroid-17-Carboxylic Acids.

2,637,741—L. Libenson—Dibenzyl Tetrathiodiglycolate.

2,637,745—Schering International — Halogenated Aryl Alicyclic Carboxylic Acids.

2,638,431—Union Carbide & Carbon—2-Nor-Camphanemethanol and 2-Nor-Camphanemethoxyethanol applied to Plants to Inhibit Fungous Growths.

2,638,432—Dr. Salsbury's Labs. — Para - Nitro - Phenyl-Arsonic Acid Composition. Controls Blackhead in Poultry.

2,638,433—J. T. George—Preparation for Peptic Ulcers.

2,638,434—U.S.A. — Tetrachloroglycoluril Derivatives as Chlorine Liberators in Ointments.

2,638,436—Mathieson Chemical Corp.—Culture of Phage-Sensitive Streptomyces Griseus.

2,638,469-70—American Home Products—Alginic Acid Sulfate Process.

2,638,471—Smith, Kline & French Labs.—Thienyl and Pyridyl Esters.

2,638,472—Hoffmann-La Roche—1-Benzyl-5,6,7,8-Tetrahydroisoquinolines.

2,638,475—**Colgate Palmolive-Peet—Spray Cooled Solid Pellets.**
2,638,478—**Hoffmann-La Roche — Phosphorous-Containing Derivatives of M-Amino-Phenols.**
2,638,484—**Hoffmann-La Roche—Preparation of an Octenone.**
2,639,285—**White Laboratories—Thiazolylamines.**

COURT CASES

2,483,855—**H. R. Stiles, Biochemical process for the production of riboflavin, Michigan. Commercial Solvents Corp. v. Fermentation Products, Inc.**
2,504,182—**D. E. Cooper, Amine salts of penicillin, New York, Bristol Laboratories, Inc. v. S. L. Ruskin.**
2,627,619—J. W. Gagen, Nail lacquer bottle assembly, including brush wiper, New York, J. W. Gagen v. Northam Warren Corp.

Proprietary Association Meeting

(*Continued from page 40*)

with respect to labeling and promotional activity pertaining to "old drugs"—those long on the market—and more restrictive for the future in its application to so-called "new drugs." With respect to them, the operation of the new drug section of the law is one of license. So, likewise, with the distribution of antibiotics which by special legislation are subject to governmental pre-testing—a form of license.

"The creation of new products which may likely come under the provisions of the new drug section or be subject to antibiotic control will, of course, invite restrictions the more confining because of sale by advertising direct to the public. Under the influence of the Durham-Humphrey Amendment, the package goods of pharmaceutical companies which do not advertise directly to the public but which are put up ready for sale over-the-counter and for self-use by the consumer will increase, and the distribution of the products manufactured by the members of this association will compete with a growing business in non-direct-advertised over-the-counter articles."

Claiming that the drug industry and the proprietary segment in particular is at a low point in earnings in a period when business is at a peak, Fred M. Truett, chairman of the board, National Wholesale Druggists Association, called for higher prices of drug products to overcome the higher costs and improve profits of manufacturers, wholesalers and retailers in the drug industry. Said Mr. Truett:

"From a list of 22 drug manufacturers, the profit picture for 1952 was not as good as for manufacturing in general. Profits for all manufacturing corporations ran about 9 per cent of sales last year. Among these 22 drug firms, net after taxes ran only 7½ per cent of sales. In no year, going back as far as 1935 when these drug manufacturers made 19½ per cent net on sales, have profits in the drug industry been as low as they

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were in 1952. It seems unbelievable, but here we are near the peak of a six-year post-war business boom and our profit rate is about one-third what it was in 1935.

"For proprietary drug manufacturers, the profit picture is even worse. In 1952, net profits of 10 selected proprietary manufacturers ran approximately 6 per cent of sales. Again, going back to 1935, a mid-depression year, we cannot find any year in which the profit rate was as low as it was in 1952. In this depression year of 1935, proprietary manufacturers showed an average profit of between 18 and 19 per cent of sales. In 1952 it was down to 6 per cent.

"The drug manufacturer is at a point where for each dollar of capital employed in his business he is earning a return of 10 cents—the proprietary manufacturer is securing about 9 cents. In each case, this rate of return is at the lowest level since mid-depression days. *This essential industry is becoming less attractive in the eyes of investors as they study one financial report after another.*

"If drug manufacturers have not fared too well this year, neither has the drug wholesaler. Profits before taxes of service wholesale druggists showed a 13 per cent decline in 1952 from the previous 1951 level. After-tax profits for 1952 dropped to 1.69 per cent of sales—the lowest since mid-depression days of 1935.

"Unfortunately we do not know the retail druggist's profit picture for 1952, but undoubtedly the picture will be discouraging also. We note that among 14 major chain drug companies, 1952 profits dropped to 3.2 per cent of sales before taxes as compared with 3.5 per cent for the previous year. This occurred in spite of a 4.3 per cent increase in sales volume for the same companies. Net after taxes continued at about the same level as 1951, 1.6 per cent, since taxes took a smaller bite out of profits than in the previous year.

"One of the major reasons, we feel, for the declining profit picture in the drug industry, has been the failure of prices to keep pace with the costs of producing and distributing goods. We have prided ourselves, over a period of many years, on the fact that we have held the line on prices in face of tremendous increases in the cost of other consumer items. This 'hold the line' policy has damaged our profit position and will continue to do so as long as it is maintained . . . We have been drifting too long. The time has come to do an about face—accept the facts—bring our prices up to date and start trading our goods and our services on a parity with the price we pay for others."

John A. Cawley, Miles Laboratories, reported as chairman of the Public Relations Committee. Mr. Cawley outlined the organization of the committee with the country divided into ten geographical areas with one individual in each area acting as District Chairman. Z. O. Moore, Chattanooga Medicine Company, is vice-chairman, and the district chairmen are: Noble Bohon for district No. 1 covering states of California, Oregon, Washington, Arizona, Nevada, Idaho, Utah, Wyoming, Colorado, New

Mexico; district No. 2, Vernon C. Mitchell, Merrick Medicine Company, covers states of Texas, Oklahoma, Arkansas, Louisiana; district No. 3, Joel Y. Lund, Lambert Pharmacal Company, covers states of Iowa, Nebraska, Kansas, Missouri, Minnesota, North and South Dakota, Montana; district No. 4, Samuel A. Culbertson, the Murine Company, covers the states of Illinois, Indiana, Michigan, Ohio, Wisconsin; district No. 5, Lamar Swift, the S.S.S. Company, covers the states of Tennessee, Mississippi, Alabama, Georgia, Florida, Kentucky, North and South Carolina; district No. 6, Francis H. McAdoo, Jr., Emerson Drug Company, covers the states of Virginia, West Virginia, Maryland, Delaware, Pennsylvania; district No. 8, Hermon A. High, Vick Chemical Company, covers the state of New York; district No. 9, Kenneth Bonham, American Home Products, covers the state of New Jersey; district No. 10, Daniel E. Pinkham, Lydia E. Pinkham Medicine Co., covers the states of Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island.

Federal Trade Commissioner Albert A. Carretta spoke on the subject of "The F. T. C.—When Will It Assume the Role of the 'Friendly Policeman'?" Mr. Carretta quoted from the 1914 message of President Woodrow Wilson to Congress urging the creation of trade commission:

"Nothing hampers business like uncertainties. Nothing daunts or discourages it like the necessity to take chances, to run the risk of falling under the condemnation of the law before it can make sure just what the law is . . . .

"And the businessmen of this country desire nothing more than that the menace of legal process in these matters be made explicit and intelligible. They desire the *advice*, the *definite guidance* and *information* which can be supplied by an administrative body."

E. T. T. Williams, Lambert Company, was re-elected president of the association for the coming year; Stanley I. Clark, Sterling Drug, was re-elected 1st vice-president; S. M. Rising, J. H. Guild Co., was re-elected 2nd vice-president; and Fred E. Rathburn, Olive Tablet Company, was re-elected 3rd vice-president. William F. Laporte, Whitehall Pharmacal, and Harry H. Hoyt, Carter Products, were re-elected to three year terms on the board of directors. Herman High, Vick Chemical Company, was elected to the board for a three year term replacing Lunsford Richardson.

Corrosion-Free Vacuum Filtration

(Continued from page 45)

It should be remembered that for all but coarse, hard grains free from fines the membrane actually does nothing but retain the first deposit of solids which then serves as the actual filter medium.

For handling acid solutions: wool, glass, nylon, vinyon or asbestos fibers might be used, as well as other materials which are available. Paper, cotton duck or

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cotton twill do well in neutral solutions. Consideration should also be given to whether organic solvents are being used. Some cloths are quite sensitive to solvents and will shrink badly.

The filter medium should also have sufficient strength to prevent breakage that can be caused by the weight of the material to be filtered and by the atmospheric load.

As smooth a cloth as possible should be chosen to facilitate the removal of the solids from the surface.

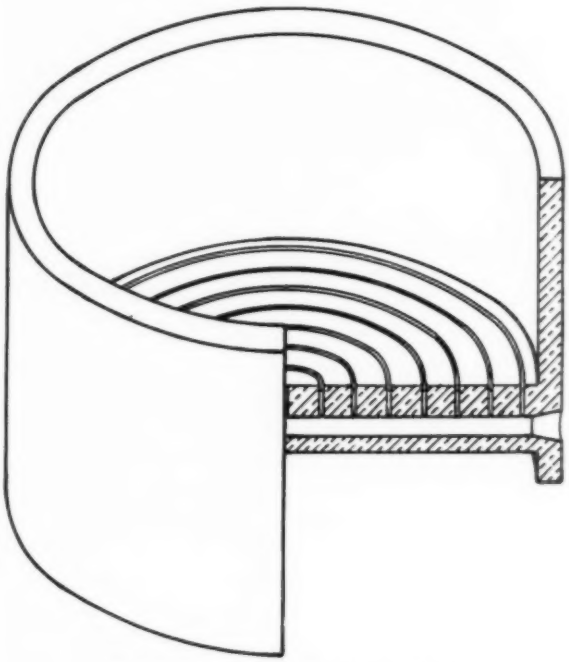

Fig. 3. "Spira-Grove"—Vacuum Filter

Filter cloths will give long service if treated properly. Care should be taken that the cloth surface is not lacerated when the cake is scraped from it. The cloths can be washed repeatedly but recommendations of the supplier should be followed to avoid shrinkage.

In place of filter cloths, porous ceramic Filterstone* is available with some types of ceramic filters. This is a sintered material made in coarse, medium and fine grades. The coarse pore size is suitable for flocculent, clogging types of matter while crystalline solids are best handled by the medium grade. The fine grade is specified for non-crystalline materials or for entirely clear filtrations.

While these Filterstones can be used with a cloth medium, they find their best use when a long run of one type of material is being made. The necessity for changing the medium is eliminated.

Another advantage that accrues from the Filterstone plates is faster filtering rates. The conventional ceramic support plate has less than 25 per cent open area while nearly 100 per cent of the Filterstone area is available. This faster filtering holds true whether a membrane is

*U. S. Stoneware Trade-Name.

placed over the plate or whether the plate itself is used as the primary medium.

As vacuum filters can be obtained in a range of capacities some idea of the correct size needed for a new installation can be gotten by actually making up a

Fig. 4. The "Filterstone" Plate, which is resin edge-sealed to prevent seepage and ground and lapped for an air-tight fit.

small filter. This can be done through the use of Buchner Funnels or with laboratory filters patterned after the larger models. By noting the rate of filtration and cake buildup through a suitable medium with a definite vacuum, enough data can be accumulated for translation in terms of larger units.

In the operation of ceramic filters the vacuum is applied to the top outlet of the lower chamber. The vacuum itself is produced by means of steam or water jets or vacuum pumps.

Filters can be operated individually or as groups. One of the leading manufacturers of fine chemicals and pharmaceuticals is operating as many as six 45-gallon filters simultaneously, using a water jet.

Most users of vaccum filters, however, prefer to use pumps. The following table lists some recommended vacuum pump capacities and power requirements for different sizes of ceramic filters.

TABLE I

Size Filter		Capacity		
Upper Chamber	Lower Chamber	c.f./min.	H.P.Motor Required	Speed of Motor
1	2 Gals.	1	¼	1750
2½	5	1	¼	1750
5	5	3½	¼	1750
10	10	3½	¼	1750
20	30	5	1/3	1750
25	50	6	½	1750
50	50	6	½	1750
50	100	9	½-¾	1750
100	50	6	½	1750
100	100	9	½-¾	1750

It should be pointed out that these capacities will suffice for usual conditions but allowance must be made for other cases.

In some plants a part of the vacuum seal is sacrificed

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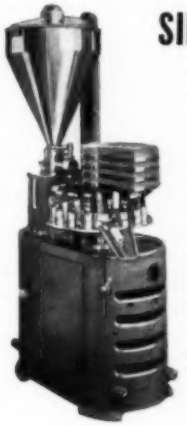

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in order to facilitate removal of the filter cloth. This could mean the need for a pump of 30-50 cfm. instead of the otherwise satisfactory cfm. one.

Heavy duty air and water cooled pumps capable of pulling vacuums up to 28 inches of mercury are available in standard models. Normal duty pumps pull about 26 inches of vacuum.

Ceramic filters are ground so well that there is little leakage of air between the mating surfaces. They can be used with no lubricant between these surfaces if that is desirable. Grease is used by many operators to help protect the lapped surfaces and to further minimize air leakage.

The use of a gasket between surfaces is advisable. Grease films or gaskets will be helpful where a maximum vacuum must be maintained or where a pump has little excess capacity. Tape or glyptal around the joints can also be used.

In setting up an installation, it is good practice to connect a ceramic surge pot in series with the pump. This serves to trap entrained or flashed off material before it reaches the pump, avoiding possible damage due to corrosion. A valve is also desirable to control the amount of vacuum applied as well as to break the vacuum at the end of the run. Figure 5, below, indicates a satisfactory set up.

Ceramic vacuum filters are made either of chemical porcelain or of stoneware, the parts being molded from balanced compositions containing clays and other inorganic minerals.

After shaping, the pieces are dried and are then fired in kilns to temperatures ranging from 2200 to 2400° F. The firing promotes reactions in the body altering it from a soft, earthy, relatively weak material to one that has good mechanical strength, low porosity, a hardness greater than iron and an almost universal resistance to salts and acids.

Ceramic bodies can be used with fairly good results for handling cool, mild alkalies. They are not recommended at all with any of the soluble fluorides due to their attack on the silicates in the composition.

Body formulas have been arrived at which might generally be described as standard stoneware, heat shock resistant stoneware and porcelain, with specific ends in mind.

The standard type of stoneware body is brown in surface color, is quite resistant to water absorption and has relatively high strength but is not suggested for use where temperatures will exceed 130° F. and where temperature differentials are great.

Heat shock resistant stonewares are designed primarily to withstand sudden temperature changes and are recommended for temperatures up to about 200° F. This property is developed by employing some unusual minerals in the body compositions to reduce the coefficient of thermal expansion. Their other properties are similar to that of standard stoneware.

Porcelain is the premium ceramic body. It is inherently white in body color and is usually covered with a glistening white glaze. This type of body is characterized by high mechanical strength, minimum water absorption and porosity and excellent resistance to thermal shock. Temperatures up to 250° F. can be used in porcelain filters.

Due to the close structure of the physically finer body and the smoother surface of the specially prepared glaze, porcelains are easier to clean than are their stoneware counterparts and they offer even greater resistance to corrosion than do the eminently resistant stonewares.

All of the body types mentioned above can be used at higher than recommended temperatures as an occasional thing but steady violation of these upper limits can result in cracking.

Ceramic ware will serve best when as small a temperature gradient as possible is maintained between the outside and inside of the piece.

A characteristic property of ceramics in general is that they are strongest under compressive loading and weakest under tensile stresses. When heat is suddenly applied to a ceramic the surface undergoes compression. On the other hand, sudden cooling develops tensile loading. It is for this reason that more care should be taken in cooling ceramic ware than in their heating.

After a ceramic filter is fired in the kiln, it is subjected to grinding operations. The outlets are faced off, faucets are ground in, the mating surfaces are smoothed down. In addition to surface grinding of the ring areas lapping is done to insure that there will be no coarseness of surface, or other high points. This is to assure minimum air leakage through the joints.

In dissembling filters, care should be taken that the lapped surfaces are not abused. Rough, careless handling may result in scratches which will partially reduce the effectiveness of the fine polish.

All ceramic filter bodies are, in themselves, completely resistant to permeation by air, and it is only at joints that such leakage might occur.

Actual tests made with a mass spectrometer at one of the Atomic Energy installations has proven that porcelain bodies are so "tight" that helium atoms liberated within closed, evacuated containers cannot escape.

The ceramic bodies used for the manufacture of

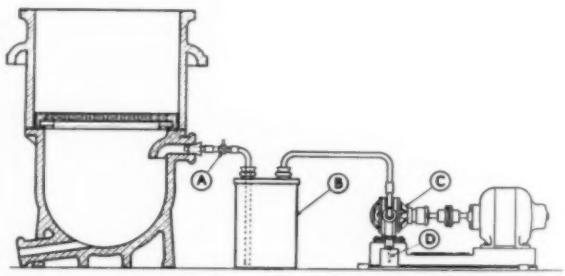

Fig. 5. Connecting Vacuum filters for Vacuum Service.

(A) Three-Way Release Valve.
(B) Chemical Stoneware Surge Pot
(volume approximately 20 per cent of lower section)
(C) Vacuum pump
(D) Oil Gauge

filters are inherently strong enough to resist, by several times at least, the total atmospheric load.

It should be remembered that where corrosion is likely to occur vacuum filters made of ordinary materials are more affected than are other types. More parts are exposed and because of the passage of air these are more subject to corrosion and oxidation effects. Such adverse effects do not markedly occur with ceramics. The fully oxidized, inert components are virtually non-reactive.

Many companies have found that ceramic vacuum filters are an essential in their production of fine materials. Producers of drugs and pharmaceuticals who are concerned with maximum purity have utilized this type of equipment wherever it lends itself to their production commitments.

Refiners of the noble, precious metals make wide use of ceramic equipment. Not only are they assured of purity of product but also that there will be no loss of material.

The filter cake is confined to a limited and very accessible area. There can be no clinging of residual matter in out of the way recesses causing either material loss or subsequent contamination. There is no loss of material due to plumbing failures or to rupture in the filter media. Should a filter cloth develop a leak the material is still retained in the receiver and salvageable, unlike the condition that exists where the filtrate is immediately drained away.

Where quantity yield demands are greater than what intermittent filters will give they still have application in the pilot plant.

The use of these filters by industrial research and development laboratories, research foundations and institutes and by universities indicates their further applicability.

In small batch production where materials are being changed often these filters offer the advantage of quick set up, quick cleaning and no contamination. Dye manufacturers are interested in these properties.

There are some manufacturers who desire to retain the filtrate liquor rather than the cake. Ceramic filters allow them to collect the fluid in a clean container for easy transferral to storage or to packaging.

In summary it might be said that ceramic filters, in addition to offering the advantages of vacuum filtering as such, have these properties:

A. Simplicity of construction
B. Ease of installation
C. Ease of cleaning and sterilization
D. Maximum corrosion resistance
E. Low maintenance and long life
F. Versatility
G. Relative portability
H. Low initial cost

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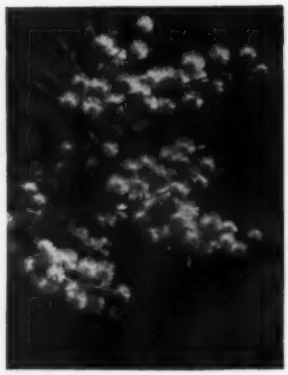
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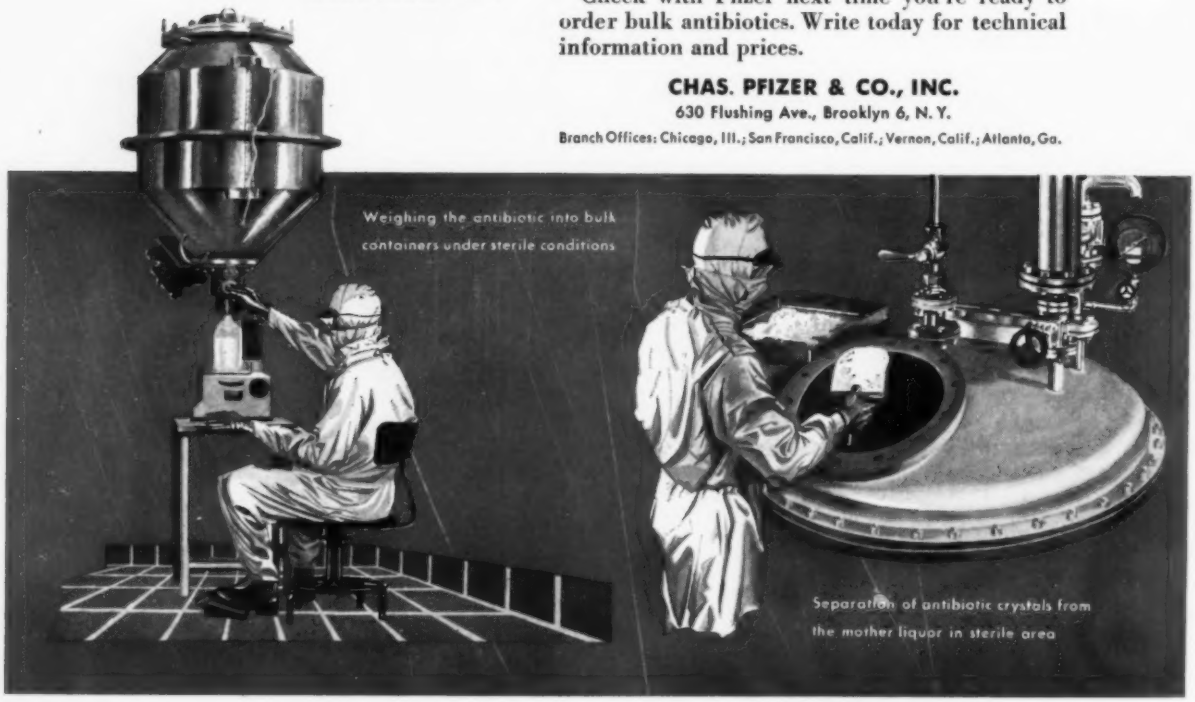
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